

# MACWORLD

The Macintosh® Magazine

May 1991 \$3.95 Canada \$4.95

## Better Than Hard Drives?

*Removable Cartridges*

See page 124

WHICH ONE SHOULD  
YOU BUY?

*12 Low-Cost Laser Printers*

FONTS

*A Guide to Their Use*

SECRETS OF COLOR TYPE

*All about Trapping*

MW LAB TEST

*38 B&W and Gray-Scale Monitors*





# The largest word history got there





# processor in Mac by thinking small.



When we introduced Microsoft® Word six years ago, we weren't planning on making history.

We had just one goal, and a fairly simple one at that: to make a word processor that suited people's needs.

Then again, we knew that the people we wanted to suit were a wildly diverse, independent lot: Mac® users. So it made sense to let them tell us exactly what to put into Word.

Which they did.

First, there were some folks who didn't like tabbing much. Fair enough. For them, we developed Tables—an easier way to set up side-by-side paragraphs, columns of numbers, even forms. No tabs. No hassle.

Then we heard from a few more people. "Love the Tables gig," they said. "Now, about this text-numbers-graphics combo all in one document..."

We made that simple with "warm links." Once you've linked Microsoft Excel data to a document, keeping that document updated with the latest Microsoft Excel figures is easy. Just click your mouse.

Then there were those senders of mail, who didn't want to click-click-click-click-click.

So we built support for Microsoft Mail right into Word. Now, with just a click, everyone stays in the loop. And work in progress *stays* in progress.

As it happens, listening to what Mac users want is a pretty good way to design software.

How else can we explain Word version 4.0 being the most popular word processor in Mac history?

And those cards and letters are still coming. "Listen," someone'll say. "In case you're working on the next Word..."

Which we are. In fact, if you've got some input for us, feel free to drop us a line. Or if you'd like to find out more about Word, call us at (800) 541-1261, Department N24.

Our goal is still simple: to make Word the best word processor around. With the latest technology—translated into human terms, of course.

After all, we're only making history because we make word processors the way you like 'em.

**Microsoft®**  
Making it all make sense®



# CONTENTS

## DEPARTMENTS



### On the Cover

Tired of pruning files and applications from your bulging hard drive? Turn to page 124 to see which removable-media drives can best solve your storage problems. (Photo by Mark Johann.)



### In News

Silicon Valley's technology museum lets you explore everything from robotics to outer space, page 103.

How to Contact Macworld .....	12
MacBulletin .....	17
Commentary/Jerry Borrell .....	23
Laptop on my mind; or, why we're still waiting on Apple.	
Letters .....	31
Art Beat .....	39
By Cathy Abes	
The Iconoclast .....	43
By Steven Levy Exploring the evolution of artificial life.	
Conspicuous Consumer .....	63
By Deborah Branscum Consumer law and the agencies that enforce it.	
State of the Mac .....	69
By Bruce F. Webster Musings on the Mac's true advantage.	
Verbatim .....	87
Soren Olsson, president of Apple Europe	
News .....	103
By Dan Littman and Tom Moran	
New Products .....	201
How To/Quick Tips .....	211
By Lon Poole	
How To/Getting Started with Multimedia .....	225
By Jim Heid	
How To/Insights on PixelPaint Professional .....	235
By Erfert Fenton	
Updates .....	241
Where to Buy .....	247
Best-Sellers .....	294



## FEATURES

**Expansion Made Easy ..... 124**

*By Tom Negrino* Have you outgrown your hard drive? We compare three types of removable-cartridge drives—on performance, price, convenience, and reliability—to find the best buy in expandable storage.

**Solving the Monitor Mystery ..... 132**

*By Robert C. Eckhardt* Macworld Lab tests 38 monochrome and gray-scale monitor systems to help you track down the right display for your Mac.

**Personal Page Printers Arrive ..... 142**

*By Jim Heid* With this year's crop of laser-quality printers combining better output and performance with lower price tags, now is the time to buy.

**Working with Fonts ..... 152**

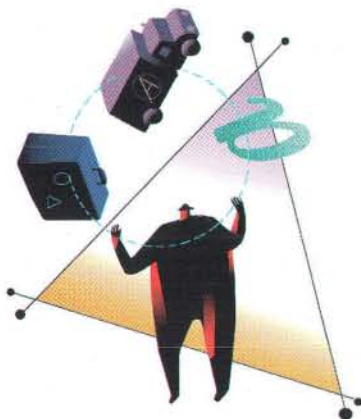
*By Erfert Fenton* Suffering from fear of fonts? Conquer your phobia with four step-by-step scenarios for installing and managing a font collection.

**Setting Traps ..... 159**

*By Steve Roth* White space is a designer's dream, but not when it turns up between two adjacent colors. Here are some color-trapping techniques that compensate for printing registration problems.

**Personal Page Printers Arrive**

Apple's StyleWriter is among the new lasers and ink-jets geared for the economy minded, page 142.



**Working with Fonts**  
Take control of your fonts, page 152.

## REVIEWS

**ES-300C ..... 164**

*Color scanner.*

**The New Grolier Electronic Encyclopedia, 1990 Edition, and The Random House Encyclopedia, Electronic Edition ..... 168**  
*Electronic encyclopedias.*

**Page Director 1.0 ..... 170**  
*Publication-management software.*

**A.M.E. 1.1 ..... 172**  
*Security software.*

**DataLink/Mac ..... 174**  
*NuBus data and send-only fax modem.*

**Intouch ..... 183**  
*Address book, phone dialer, envelope/label-printing DA.*

**BannerMania ..... 185**  
*Banner-printing program.*

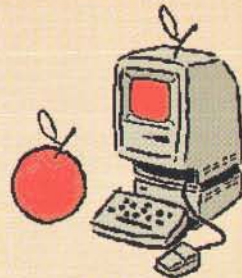
**Org Plus for Macintosh 1.0 .... 187**  
*Organization chart software.*

**LifeGuard ..... 188**  
*Ergonomics software.*

**Editorial Advisor 1.0 ..... 188**  
*Editors' online reference.*

**ConvertIt 1.02 ..... 192**  
*HyperCard conversion utility.*

**Window Shopping ..... 195**  
*After Dark 2.0; 3 in Three 1.0; Wouldn't You Rather Be Rich? and Financial Independence, As You Like It 2.0; EasyKana; FolderJump 1.1; Fractal Attraction 1.0; SmartCards.*



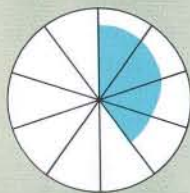




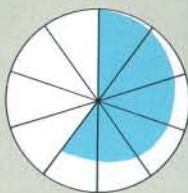
All video display terminals (VDTs) emit electromagnetic radiation (EMR) through the screen. The photo on the left is a visualization of EMR in red from the screen. The photo on the right shows that the NoRad Shield™ virtually eliminates screen-emitted E-Field EMR and better than half of magnetic EMR.\*

# NoRad Radiation Shield No One Comes Close

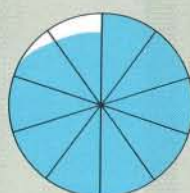
## E-FIELD SHIELDING TECHNOLOGY COMPARISON TO 1 GHz



CARBON MESH



GLASS/ACRYLIC



NO RAD SHIELD

Figures are based on independent lab tests conducted to Military Specification MIL-STD 285 of the NoRad Shield™ and other commercially available radiation-blocking screens.

No other VDT screen comes close to the NoRad Shield when you're talking about blocking electromagnetic radiation (EMR). If you're thinking of buying a radiation shield, consider the facts:

- Only the NoRad Shield blocks virtually all E-Field EMR\*
- Only the NoRad Shield blocks magnetic EMR\*
- And, the NoRad Shield discharges the static field while eliminating glare and reflections.

The NoRad Shield – simply the best radiation shield available. Compare and you'll see that no one else even comes close. Call for free product information.



- Easy to install
- Color or monochrome
- Available in sizes to fit virtually all monitors, displays and terminals

# NoRad

## IN USA:

800-624-8999 Ext. 498  
NoRad Corporation 1549 11th St.  
Santa Monica, CA 90401  
**213-395-0800**  
**Fax: 213-458-6397**

\*99.9999% electric (E field) attenuation from 60 Hz to 1 GHz.  
\*Greater than 50% magnetic (H field) attenuation above 30 KHz.  
NoRad Shield is a trademark of NoRad Corporation.

# MACWORLD

Editor-in-Chief **Jerry Borrell**

## EDITORIAL

Executive Editor **Adrian Mello**

Managing Editor **Charles Barrett**

Assistant Managing Editors **Luis A. Camus, Ruth Henrich**

Editorial Manager **Jane Lagas**

Senior Associate Editor/Depts. **Deborah Branscum**

Senior Associate Editor/Lab Manager **Chip Carman**

Senior Associate Editor/Reviews **Carol Person**

Senior Associate Editor/Features **Suzanne Stefanac**

Senior Associate Editor/East Coast **Brita Meng**

Senior Associate Editor/Features **Cheryl E. Spencer**

Associate Editor/Departments **Cathy E. Abes**

Associate Editors/News **Dan Littman, Tom Moran**

Associate Editor/Features **Charles Piller**

Associate Editor/Features **Liza Weiman**

Assistant Editor/Lab **Mark Hurlow**

Assistant Editor/New Products **Mary Margaret Lewis**

Production Editor **Jo Ann Villalobos**

Senior Copy Editor **Katherine L. Ulrich**

Copy Editors **Marjorie Baer, Paul King, Felicity O'Meara**

Production Assistant **Lisa Brazieal**

Editorial Assistants **Carolyn Bickford, Suzanne Courteau,**

**Danny Lee, Tim Warner**

Editorial Administrative Assistants

**Evan Cooper, Lyn Taylor**

Assistant to the Editor-in-Chief **Sandy Butler**

Contributing Editors **Robert C. Eckhardt, Erfert Fenton,**

**Rob Hahn, Jim Heid, Dave Kosior, Steven Levy,**

**Joe Matazzoni, Tom Negrino, David Pogue, Lon Poole,**

**Steve Roth, Charles Seiter, Franklin N. Tessler,**

**Bruce F. Webster**

Overseas Editors **Osmund Lind Iversen, Editor,**

**Australian Macworld, tel. 02-439-5133;**

**Peter Worlock, Editor, Macworld (U.K. edition),**

**tel. 01-831-9252; David Ushijima, Contributing Editor, Japan**

## ART AND DESIGN

Design Director **Dennis McLeod**

Art Director **Joanne Hoffman**

Senior Designer **Leslie Barton**

Associate Art Director **Sandra Koenig**

Assistant Art Director **Kent Tayenaka**

Designer/Informational Graphics **Arne Hurty**

Associate Designers **Hae Yuen Kim, Matthew C. Nielsen**

Senior Design Associate **Tim Johnson**

Design Associate **Martha Katt**

## PRODUCTION

Director of Manufacturing **Anne Foley**

Production Manager **Claudia Dawn Smukler**

Advertising Billing Coordinator **So Fong Yip**

Advertising Traffic Coordinator **Arlette Crosland**

President/CEO and Publisher, Macworld

Communications, Inc. **James E. Martin**

Assistant to the President **Terri Edelman**

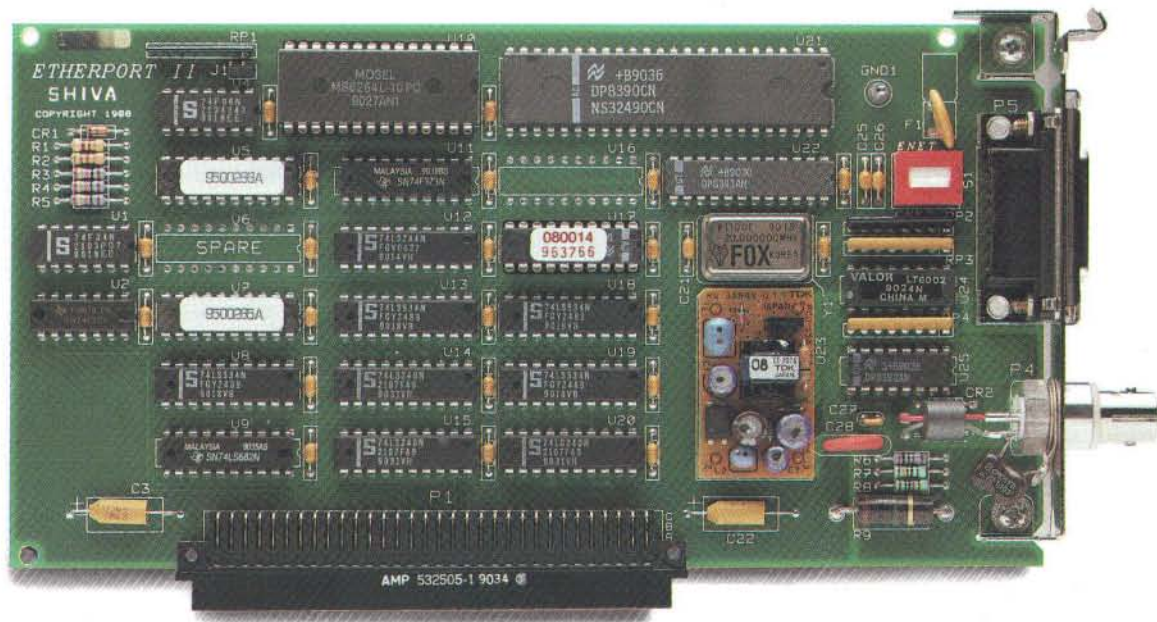
May 1991, Volume 8, Number 5

Macworld (ISSN 0741-8647) is published monthly by Macworld Communications, Inc., 501 Second Street, San Francisco, CA 94107. Subscription rates are \$30 for 12 issues, \$60 for 24 issues, and \$90 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$18 per year for postage for Canada and Mexico subscribers. Add \$69 per year for foreign postage to all other countries. Second-class postage paid at San Francisco, California, and at additional mailing offices. POSTMASTER: Send address changes to Macworld, P.O. Box 54529, Boulder, CO 80323-4529. For dealer inquiries, call 800/999-1170. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505.

Circle 292 on reader service card.



# Introducing a brand new product 100,000 people have already bought.



## Novell's EtherPort is now a Shiva product.

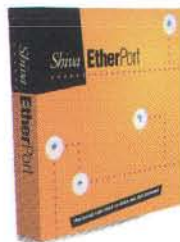


*EtherPort cards are available for a variety of Macintosh models.*

EtherPort®, the leading Macintosh Ethernet card sold by Novell, is now a Shiva product.

As the leader in AppleTalk internetworking products, Shiva has been exclusively chosen to support and evolve the EtherPort product line. Which is why EtherPort now comes with new, high-performance drivers. Along

The day we introduced our newest product, a lot of people already owned it. Because



*Shiva is now the company to contact for all EtherPort support.*

with support for 10BaseT. And coming support for Apple's Ethernet cable system. All for \$100 off Novell's original price.



*Etherport cards can also support 10BaseT.*

If you're already using EtherPort, all you have to do is call Shiva at 800-458-3550, or 617-252-6300, for your free driver upgrade. And if you're looking to purchase an Ethernet card, call the same numbers to find out which card is best for your Mac. You'll find it's easy to connect with Shiva.

### *EtherPort® by Shiva*

One Cambridge Center, Cambridge, MA 02142

All product names are trademarks or registered trademarks of their respective manufacturers.



# radius™

© 1991 Radius Inc. Radius, the Radius logo, and all Radius products are trademarks of Radius. For the location of your Radius International Distributor, call 1 (408) 434-1010.

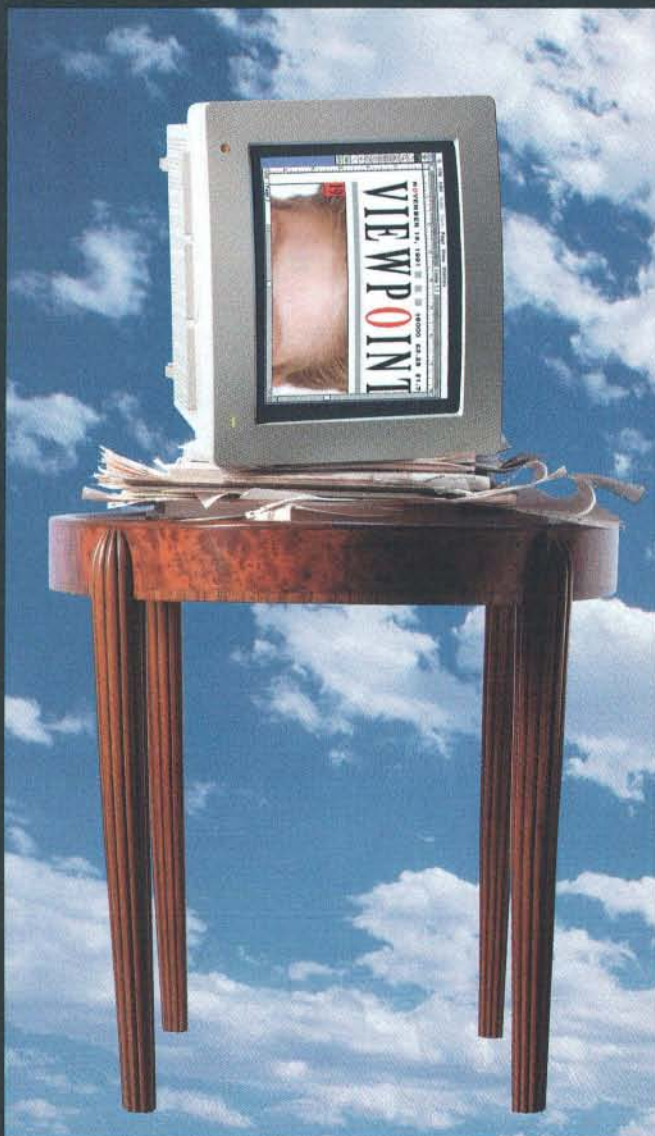
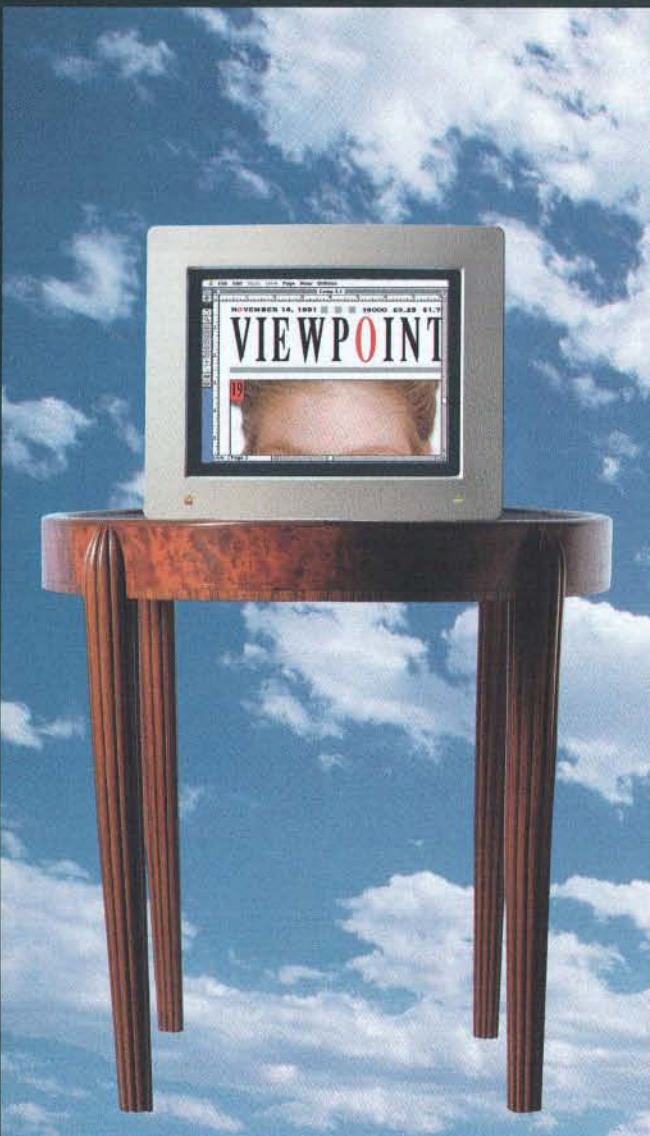


## THE NEW COLOR PIVOT SHOWN IN LANDSCAPE AND FULL-PAGE MODE

The comparison you see above is really no comparison at all. ● If you live in a world where things are all middle with no top or bottom, or where the year has only six months, you might choose the Apple.® But if you would

like to see a full page of color graphics, and see twelve months of spreadsheet instead of merely six, and be able to go from portrait to landscape with swift and deft ease, *and* own the only color full-page display on the





Other brands and product names are trademarks of their respective holders.

## THE APPLE 13" SHOWN IN LANDSCAPE AND...UH...PAPERWEIGHT MODE.

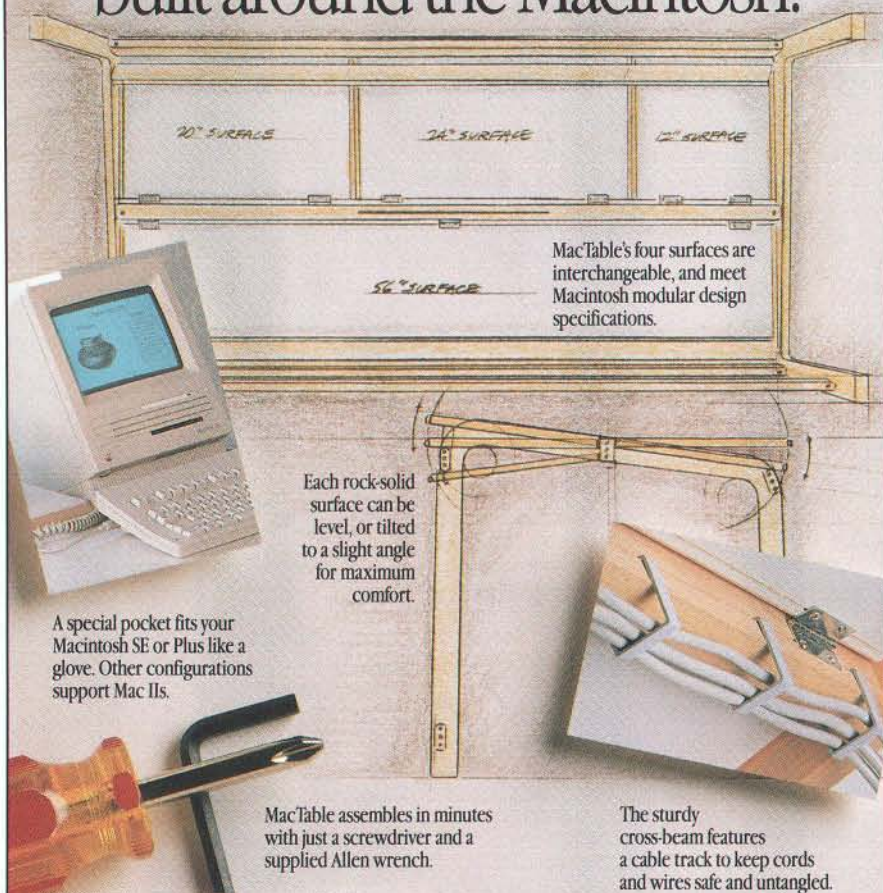
market, you will probably choose the Color Pivot.<sup>™</sup> Okay, you will definitely choose the Color Pivot. ● The Color Pivot is compatible with all color capable Macs. And on the Mac IIsi and IIfx with built-in video, the Color

Pivot needs no interface. But when all is said and done, perhaps the best thing about the Color Pivot is that, well, it's a Pivot. ● For more information, or the location of your nearest Radius reseller, call 1 (800) 227-2795.





The only table  
built around the Macintosh.



MacTable's four surfaces are interchangeable, and meet Macintosh modular design specifications.

Each rock-solid surface can be level, or tilted to a slight angle for maximum comfort.

A special pocket fits your Macintosh SE or Plus like a glove. Other configurations support Mac IIs.

MacTable assembles in minutes with just a screwdriver and a supplied Allen wrench.

The sturdy cross-beam features a cable track to keep cords and wires safe and untangled.

All this and it's affordable, too.

58" MacTable..... \$359

46" MacTable..... \$329

Roll-away cabinet..... \$159

(fits under MacTable, or alongside to support LaserWriter)

30 day return guarantee.



To order MacTable:  
or for more information,  
call toll-free (800) 722-6263  
or (206) 481-5434 in WA.

**MacTable**  
The ultimate Mac peripheral.

**ScanCo**

P.O. Box 3217, Redmond, WA 98073-3217

Prices do not include UPS shipping. MacTable design is patent pending. MacTable is a registered trademark of Scandinavian Computer Furniture, Inc. Macintosh and LaserWriter are trademarks of Apple Computer, Inc. Prices and design subject to change without notice.

## ADVERTISING SALES

Vice President/Director of Advertising Sales  
**Patricia Navone** (415/243-0505)

Assistant to the Vice President/Director of  
Advertising Sales **Yuen Yeh** (415/978-3258)

Western Advertising Manager **William P. Peck**  
(415/243-0505)

Senior Account Manager/No. California (San  
Francisco) **Penny Rigby** (415/243-0505)

No. California **Beverly Schneider** (415/978-3138)

No. California (San Jose) **Cherie La France**  
(415/243-0505)

Northwest **Regina T. Salaices** (415/978-3155)

Sales Associate **Shannon Smith**

So. California **Paul Dudas** (714/250-1307)

Southwest, Texas **Cathi Tucker** (714/250-1307)

Sales Associate **Marsha Bowers** (714/250-1307)

Midwest **Lisa Ladle** (708/827-4477)

Sales Associate **Sandy Mussato**

Eastern Advertising Manager **Bill Thompson**  
(201/967-1350)

Mid-Atlantic **Annette Bremer** (201/967-1350)

New England/Florida **Joan Flynn** (508/879-0700)

Sales Associate **Susan Cardoza**

Southeast Office (404/394-0758)

Macworld Catalog **Carol Felde, Niki Stranz**  
(415/978-3152; 415/978-3105)

## INTERNATIONAL SALES

Director of International Sales

**Shannon Dolan** (415/243-0505)

Administrative Assistant **Darien Werthorst**

## MARKET RESEARCH

Director of Research **Gary L. Rocchio**

Research Coordinator **Guy Tasaka**

Vice President/Marketing and Circulation  
**Daniel Orum**

## MARKETING

Marketing Associate/Reader Service **Susan Carroll**  
Marketing Associate/Events and Merchandising

**Lisa Espinoza**

Marketing Associate/Communications

**Kimberlee Luedde**

Marketing Assistant **Annette Garcia**

## CIRCULATION

Director of Circulation **Lindsay Davidson**

Single-Copy Sales Director **George Clark**

Assistant Subscription Manager **Lori Hitchcock**

Single-Copy Sales Rep **Martin Garchar**

Subscription Analyst **Elizabeth Jensen**

Subscription Coordinator **Susanna Camp**

Administrative Assistant **Marjorie Maggenti**

## ADMINISTRATION

Director of Finance **Vicki Peilen**

Corporate Business Manager **Christina W. Spence**

Accounting/Operations Manager **Pat Murphy**

Director of Human Resources **Shelly Ginenthal**

Director of Information Systems **Walter J. Clegg**

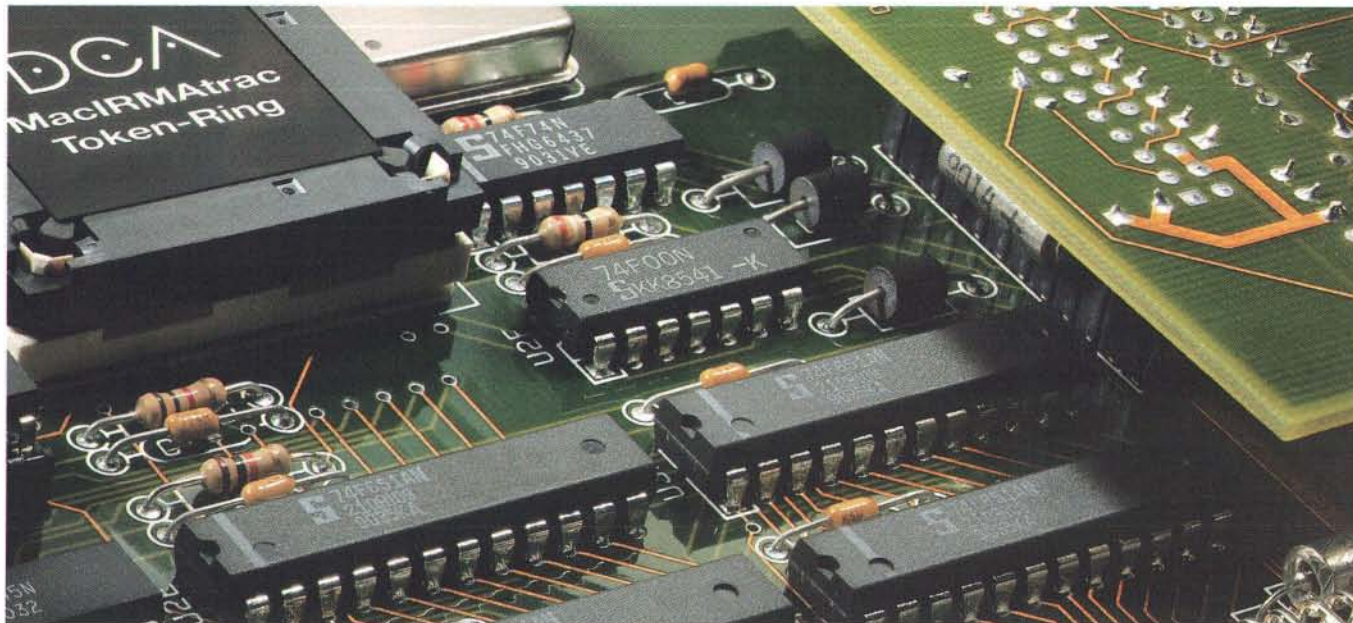
Accounting/Facilities Manager **Michelle Reyes**

Founder **David Bunnell**

Founding Editor **Andrew Fluegelman 1943-1985**

Circle 296 on reader service card.

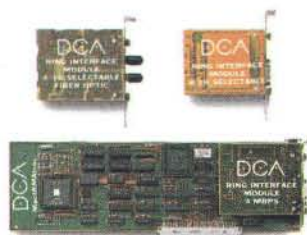




# The biggest computer news isn't just coming out of Apple. It's going into it.

## MACIRMATRAC: THE MOST FLEXIBLE MAC TOKEN-RING BOARD

Despite the myriad of connectivity options that exist today, there's really only one decision to make. MacIRMatrac™ Token-Ring.



*With our replaceable RIM technology, you'll never have to worry about buying another token-ring board.*

With MacIRMatrac, Macintosh® users can handle many different growth possibilities today and in the future. This unmatched flexibility is the result of our replaceable ring interface module (RIM) technology that allows a single token-ring board to adapt in a variety of ways.

By offering 4 MBPS and 4/16

MBPS RIMs, and 4/16 fiber optic RIMs in the near future, MacIRMatrac is the ultimate solution to meet all your needs.

For instance, if your current cabling method is twisted pair, but you see a move to fiber optic in the future, you need only buy a new RIM to make the change.

And as newer technologies emerge, you can expect new RIMs which will let you migrate easily without purchasing a new board.

We offer the same technology in IRMatrac™, our convertible PC Token-Ring board. In fact, the RIMs are interchangeable. Plus, you'll have a single source for purchasing, support, training, updates, and upgrades for your Mac, PC and PS/2® token-ring network.

DCA's MacIRMatrac supports all Macs with NuBus (Mac II) archi-

ture and it's fully compatible with AppleTalk®. And in combination with MacIRMA® WorkStation 3270 software, MacIRMatrac now allows you to connect to more SNA environments than with any other Mac-to-mainframe solution.

So now, with this flexibility, MacIRMatrac gives you the freedom to make the choices that are right for your business without sacrificing your initial investment.

If you'd like more information on MacIRMatrac and how it can help you meet all your LAN connection needs, call us today at 1-800-348-DCA1, ext. 68G.

MacIRMatrac. Because what you get out of your Mac is only as good as what goes into it.

**DCA**

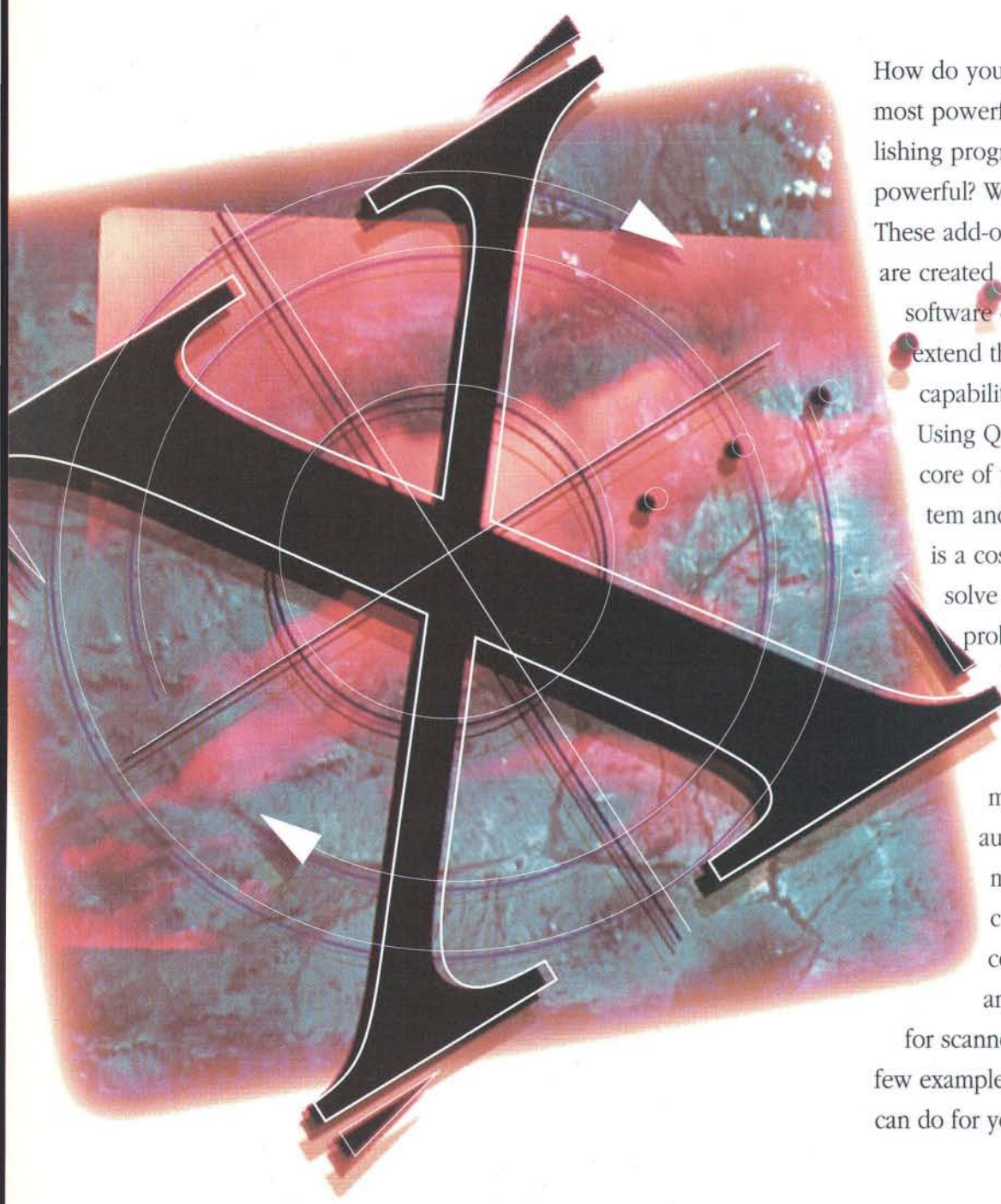


©1991 Digital Communications Associates, Inc. All rights reserved. DCA and MacIRMA are registered trademarks and MacIRMatrac and IRMatrac are trademarks of Digital Communications Associates, Inc. All other brand or product names are trademarks or registered trademarks of their respective owners.

Circle 71 on reader service card

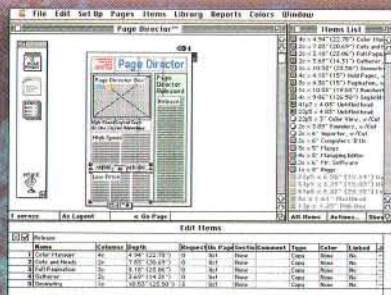


# Expand the power of QuarkXPress with XTensions.



How do you make the world's most powerful electronic publishing program even more powerful? With XTensions! These add-on software modules are created by independent software developers to extend the features and capabilities of QuarkXPress. Using QuarkXPress as the core of your publishing system and adding XTensions is a cost-effective way to solve complex publishing problems. Popular XTension applications include links to data bases, automatic pagination, automation of commonly used processes, continuous-tone color separations, and special drivers for scanners. Here are just a few examples of what XTensions can do for you.





## Manage the design of a publication with Page Director.

This publication management XTension from Managing Editor Software, Inc. lets you build a publication *and* keep track of all the page elements. You can create complete page layouts, then generate reports that give you the status and design characteristics of

copy, graphics, and advertising as your publication comes together. With the unique "Gatherer" feature, you can have Page Director search for files on your network and place them directly in predestinated locations. Page Director even suggests color configurations based on a library of up to 2,048 configurations. When your publication is ready, flow it directly into QuarkXPress for final changes and output.

## Flow information from a data base into QuarkXPress automatically with Autopage.

K. Erf Associates has created an automated page makeup XTension that helps you with the production of books, manuals, textbooks, technical documentation, and technical journal articles. Autopage lets you take advantage of batch processing to flow text directly into QuarkXPress and automatically control page breaks, graphics placement, footnotes, and vertical spacing.

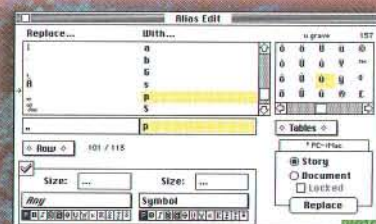
Now you can use the precision of QuarkXPress and — by automating the page makeup process —

significantly decrease your production time.

## Implement multiple search and replace operations with Alias.

With this XTension from RESEAU, you can run whole sets of search and replace operations to save time when you are working on large or complex documents. What's more, you can customize Alias to allow multiple strings to be defined and stored as tables.

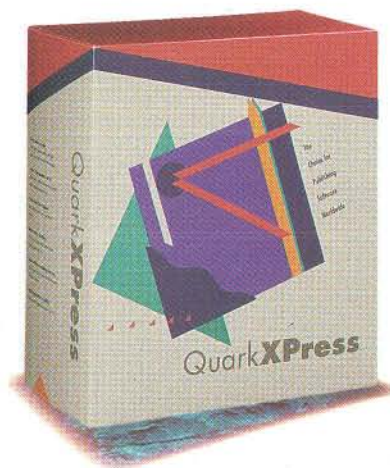
Uses for this XTension include typographical correction, conversion of PC text files, filtering downloaded text files, implementation of professional ligatures, and copy correction. Alias comes with a set of search criteria that enables you to quickly correct common errors, such as those in punctuation and spacing.



## And much, much more!

If you are interested in receiving information about QuarkXPress and a catalog of available XTensions, please circle the reader service number below or call 1-800-356-9363.

**QuarkXTensions™**  
Expand the Power of QuarkXPress



**QuarkXPress®**  
The Choice for Publishing  
Software Worldwide

Quark, Inc., 300 South Jackson Street, Denver, Colorado 80209

QuarkXPress is a registered trademark of Quark, Inc. QuarkXTensions is a trademark of Quark, Inc. All other trademarks are the property of their respective owners.

Circle 65 on reader service card



# RETROSPECT

ARCHIVING & BACKUP SOFTWARE

1989 Eddy  
Award for  
"BEST BACKUP  
SOFTWARE"  
by MacUser  
Magazine.

## To Go Forward You Must Backup

On the Macintosh, creation and storage go hand-in-hand. You create. Then you store. Pretty soon, your hard disk is full of files--each one vulnerable to a hard disk crash. Retrospect will protect your creativity. And offers more than any other backup software: Archiving. Archive files to keep your storage needs in check. Retrospect supports almost any storage device and has compression, encryption, and full file selection. Run it automatically with a built-in calendar.

**Retrospect. The Best Backup  
for Your Creativity.**



**Dantz**  
Development Corp.

**CALL OR FAX**

**CALL: (415) 849-0293 FAX: (415) 849-1708**

Circle 259 on reader service card.

# MACWORLD

## HOW TO CONTACT MACWORLD

### Subscription Services

For subscription service questions, call 800/234-1038, 800/525-0643, or 303/447-9330, or write Subscriber Services, P.O. Box 54529, Boulder, CO 80322-4529. To place orders, call 800/288-6848.

### Macworld on America Online

Macworld subscribers can contact Macworld editors online via the Macworld area on America Online. The area features reviews, news, new-product announcements, version information, a database of products, and Macworld-sponsored message boards and conferences. Several of our editors log on on a regular basis. To obtain a free America Online software kit, call 800/227-6364, extension 5254.

### Macworld in Microform

Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346, 313/761-4700.

### Back Issues of Macworld

Write to: Back Issues of Macworld, 144 Townsend St., San Francisco, CA 94107; \$6 per issue (\$20 overseas). Prepayment in U.S. funds necessary.

### Macworld Editorial

**Mail or Courier** Macworld Communications, Editorial Dept., 5th floor, 501 Second St., San Francisco, CA 94107; 415/243-0505.

**AppleLink:** Macworld1 **Connect:** Macworld1  
**CompuServe:** 70370, 702 **Fax:** 415/442-0766

**Letters to the Editor** All your written comments, questions, and suggestions regarding any aspect of the magazine are read by our editor. We reserve the right to edit all submissions; letters must include your name and address. Direct all correspondence (by mail or electronically) to: Letters to the Editor. **Questions and Quick Tips** Direct questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to: Quick Tips, Lon Poole.

**Consumer Advocate** Been burned? Really steamed? Direct your concerns (by mail or electronically) to: Conspicuous Consumer, Deborah Branscum.

**New Products and Updates** Direct press releases and product announcements (by mail or electronically), and shrink-wrapped software upgrades (by mail or courier) to: New Products Editor.

**Editorial Calendars** For a copy of Macworld's editorial calendar, direct requests (by mail) to: General Information, Editorial Dept.

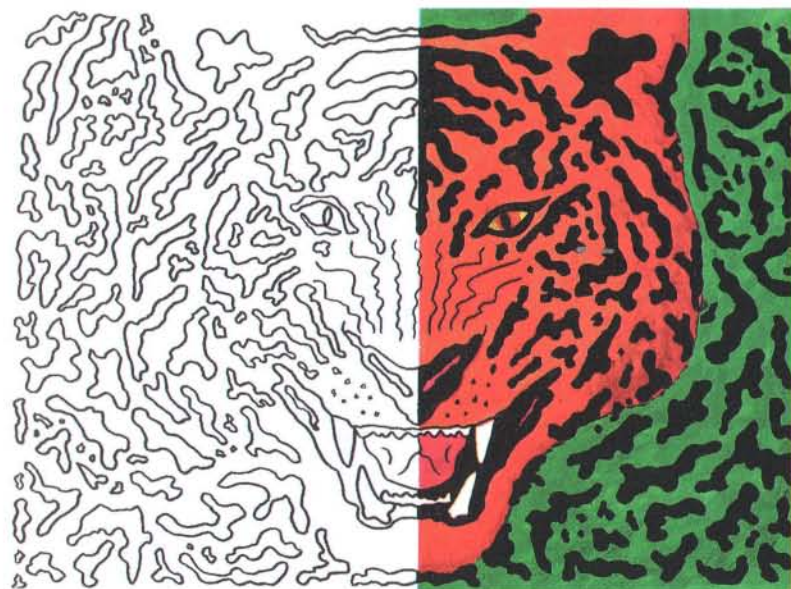
**Reprints and Photocopy Permission** Permission will be granted by the copyright owner for those registered with the Copyright Clearance Center (CCC) to photocopy any article herein—for personal or internal reference use *only*—for the flat fee of \$1.50 per copy of the article or any part thereof. Specify ISSN 0741-8647 and send payment directly to the CCC at 27 Congress St., Salem, MA 01970. Address requests for reprint orders and for permission to copy editorial for other purposes to: Reprints and Permissions, Editorial Dept.

**Writing for Macworld** Please do not send us unsolicited manuscripts. If you're interested in writing for Macworld, send a stamped, self-addressed envelope along with a request for our writer's guidelines. Direct (by mail) to: Writer's Guidelines, Editorial Dept.

Macworld is a publication of Macworld Communications, Inc. Macworld is an independent journal not affiliated with Apple Computer, Inc. Macworld is a registered trademark of IDG Communications, Inc. APPLE, the APPLE LOGO, MAC, and MACINTOSH are registered trademarks and MACLETTER is a trademark of Apple Computer, Inc. Printed in the United States of America. Copyright © 1991 Macworld Communications, Inc. All rights reserved. Macworld is a member of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 150 computer publications in more than 49 major countries. Nineteen million people read one or more IDG Communications publications each month.

BPA

IDG



## WHAT YOU DON'T SEE CAN HURT YOU.

It's an information jungle out there. Statistics. Surveys. Sales. After a while, it all starts to look alike. Which is why Cornell Professor Paul Velleman created Data Desk, the only software true to the vision of Exploratory Data Analysis. Data Desk lets you examine and visualize your data in ways you may have never considered, allowing patterns to emerge and exceptions to be seen. All with basic point and click operations. For a free Macintosh Test Flight Kit, call 1-800-334-6041.

**Data Desk**

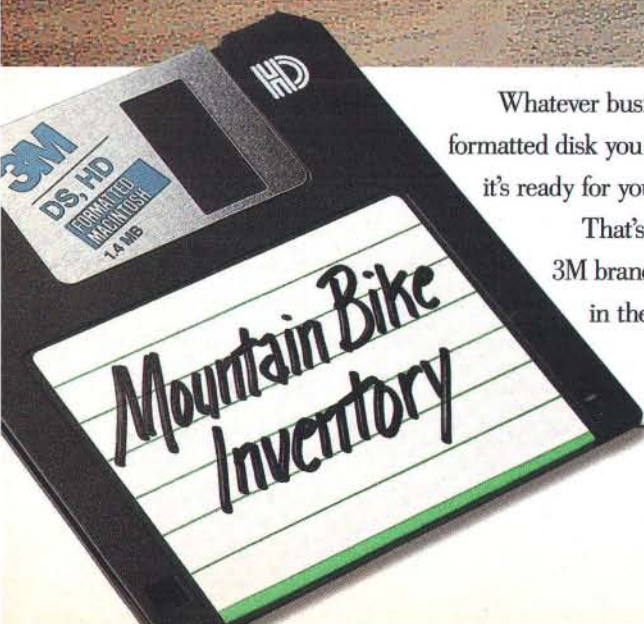
© Odesta Corporation, 4084 Commercial Ave., Northbrook, Illinois 60062 708/498-5615  
Data Desk is a registered trademark of Data Description, Inc. Macintosh is a registered trademark of Apple, Inc.

Circle 238 on reader service card.





Your business is safe with us.  
Especially when it's really rolling.



Whatever business you're in, we're ready to roll in just about any size, capacity or factory formatted disk you need. And if business is really moving, look into our 4 megabyte diskette—it's ready for your new system whenever you are.

That's why more business protects important information on 3M brand diskettes and data cartridges than any other brand in the world.

Call 1-800-888-1889 ext.3 to find out more.



Innovation working for you™

Diskettes require a compatible drive. ©3M 1991.

Circle 23 on reader service card

**3M** |   
Worldwide Sponsor 1992 Olympic Games  
36USC380



# How to make accommodate every Tom



*TOM: "Well, that's an accurate presentation of unit sales, but what I'd like to know is dollar sales..."*

Now, you can answer all those "What if...", "What about..." and "What would happen..." questions from every Tom, Dick and Harriet in the room. Instantaneously. In brilliant, photographic-quality color.

With the new In Focus 5000CX LCD projection panel.

Simply place it on your overhead, connect your Macintosh or IBM compatible computer and you



have one of the most powerful and persuasive presentation tools ever seen.

The 5000CX can project nearly 5000 colors at a time. And its 640 x 480 resolution supports all VGA, EGA, CGA and Macintosh video standards.

So you can access all of your computer's software. While you're presenting.

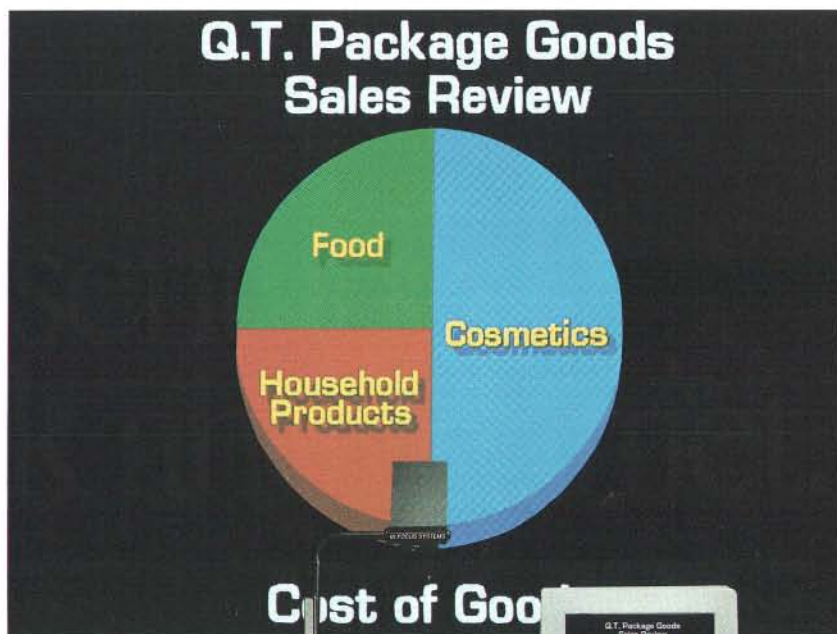
You can project new projections. Revise revisions. And tailor your presentation to accommo-



# your presentation om, Dick and Harriet.



**DICK:** "That was certainly quick. Have you got any data on the actual costs of goods?"



**HARRIET:** "That's not a pretty picture for the cosmetics division. By the way, do you think you could help me out on this presentation I'm giving tomorrow..."

date every member of your audience. On the spot.

What's more, you'll never again have the cost or hassle of preparing slides. Or the boredom of presenting yet another set of dull, black and white overheads.

The 5000CX is just one of a complete line of high-performance, portable In Focus color and monochrome projection panels.

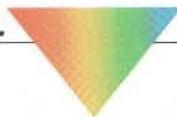
Come see a demonstration of one today.

We promise you a show you won't forget.

## FREE OVERHEAD OFFER

For a limited time, we're giving away a free portable overhead projector with every In Focus color projection panel\*. It's a \$495.00 value. So call 1-800-327-7231 or in Oregon, 503-692-4968 today. And arrange to see a free demonstration.

**IN FOCUS SYSTEMS® INC.**



restricted or prohibited. In Focus, the In Focus logo and the In Focus 5000CX are registered trademarks of In Focus Systems, Inc. All other trademarks or registered trademarks are the property of their respective holders.

Circle 5 on reader service card

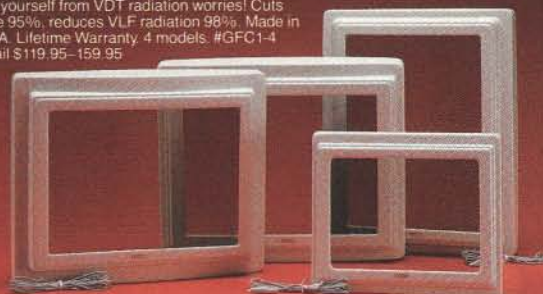




**MacFeet™:** Relieve eye & neck strain! Raises Mac to optimum viewing angle. For Macintosh, SE, Plus, Classic. Made in U.S.A. Lifetime Warranty. #MT-2 Retail \$14.95



**Custom Glare Filters:** Relieve eyestrain, free yourself from VDT radiation worries! Cuts glare 95%, reduces VLF radiation 98%. Made in U.S.A. Lifetime Warranty. 4 models. #GFC1-4 Retail \$119.95-159.95



**Dust Covers:** Anti-static! For most Mac systems, Imagewriter II, Laserwriter II. Made in U.S.A. Lifetime Warranty. #DC1-6 Retail \$14.95-24.95



**Keyboard Organizer:** Wrist-rest/desktop organizer in one! Fits Mac extended keyboard. Made in U.S.A. Lifetime Warranty. #KO-1 Retail \$39.95



**Mouse Pad Organizer:** Wrist-rest/storage tray in one! 8" x 9 1/2" pad included. Made in U.S.A. Lifetime Warranty. #MP-3 Retail \$12.95

**Mouse Pad:** 8" x 9 1/2". #MP-1 Retail \$6.95



**Mac Tilt & Swivel:** Improve viewing comfort! Swivels 360°, tilts 22°.



For Macintosh, SE, Plus, Classic. Made in U.S.A. Lifetime Warranty. #MT-1 Retail \$24.95

**Apple Security Kit:**

Prevent theft, unwanted borrowing! Easy to install. Made in U.S.A. Lifetime Warranty. #SL-2 Retail \$29.95



## Affordable Protection

### Seven New Mac Accessories by Curtis

Curtis' new line of ergonomic accessories for the Macintosh® offers you unbeatable protection at affordable prices.

From anti-static, anti-VLF radiation Custom Glare Filters to the innovative new MacFeet™. From the wrist-saving Mouse Pad and Keyboard Organizers to the eye-saving Tilt & Swivel monitor base.

Curtis also has accessories that protect your Mac. Like custom fit Anti-Static Dust Covers, and the Apple Security Kit to prevent theft and unwanted borrowing.

Don't take chances. Protect your health – and your investment – with unbeatable, affordable Mac accessories by Curtis.

**For the Curtis dealer nearest you call (603) 532-4123 Ext. 42  
Ask for your free "Tips to Computing More Comfortably" brochure.**

Manufacturing Company, Inc.

CURTIS

Macintosh and Macintosh SE are registered trademarks of Apple Computers Inc.

30 Fitzgerald Drive, Jaffrey, NH 03452

©Curtis Manufacturing Company Inc.

Circle 20 on reader service card





# MACBULLETIN

## **Apple Interface Suit Heads for Trial**

A federal district court judge's ruling that the Macintosh interface is original to Apple has cleared the way for Apple's copyright-infringement suit against Microsoft and Hewlett-Packard to go to trial. The San Francisco judge also held that a 1985 agreement between Apple and Microsoft does not give Microsoft an effective license to use significant parts of the interface—overlapping windows and icons—which appear in Microsoft Windows 2.03 and in Hewlett-Packard's NewWave.

## **DTP's Bad Old Days?**

A federal judge in Denver has granted Quark's request for an injunction to block Scitex from selling Visionary. Negotiations to renew Scitex's license for Visionary, a version of QuarkXPress that can export in Scitex's proprietary format, broke down largely over Quark's desire to produce a product that could read as well as write Scitex files. At press time, Scitex, its customers, and its resellers were prohibited from marketing Visionary, though Visionary owners could continue to use the product.

## **Meanwhile, Back at the Ranch...**

Quark has not let the lawyers bog down its engineers. Version 3.1 of QuarkXPress adds many features, including some for high-end users. You can set choke and spread specifications for individual elements. A Colors palette supports coloring and shading frames, pictures, text, and backgrounds, and color blends. Styles are now available from an on-screen palette. You can also save kerning and tracking tables with a document. For more information, contact Quark at 303/934-2211.

## **The Future of Memory**

Prices for 1MB SIMMs (Single Inline Memory Modules) have soared since December, when the memory chips bottomed out at less than \$40. Many overseas manufacturers have cut back the production of 1MB chips in favor of 4MB chips, while demand for the 1MB SIMMs has remained steady. Prices on 4MB SIMMs are falling, and one vendor predicts the two configurations will achieve price parity during the second quarter.

## **NEC Introduces Color PostScript Printer**

NEC Technologies has begun shipping an entry-level color PostScript printer that uses a thermal-

transfer print engine and lists for \$6995. Called the Colormate PS Model 40, the device includes 4MB of RAM, 17 Adobe fonts, and a 68020 microprocessor. NEC is also offering a \$2000 upgrade board with another 4MB of RAM and 18 fonts. NEC will sell the upgraded printer as the Colormate PS Model 80, which will supersede the existing Colormate PS. The Model 40 handles letter-size and A4 pages, while the Model 80 can also handle legal-size paper. For more information, contact NEC at 508/264-8000.

## **FrameMaker's New Picture**

Version 3.0 of the technical publishing software FrameMaker adds three key features: support for importing (but not editing) full-color images and exporting them for color separation; a nonmodal table-creation environment; and a new text-control system called conditional text. Conditional text lets you embed several versions of text in a document and set conditions to control displaying and printing versions—for example, a manual for software that runs on Macs and Sun workstations might contain two sets of instructions in the chapter on installation. FrameMaker's price remains \$995. For more information, contact Frame Technology at 408/433-1928.

## **Color Pivot: A New Twist from Radius**

Radius recently began shipping the Radius Color Pivot, a color version of the company's popular pivoting-screen monitor. The 15-inch Color Pivot can display 16 colors when running with the built-in graphics controller on the Mac IIci or IIsi, and 256 colors when using one of a range of Color Pivot graphics adapters from Radius. The graphics adapters, also shipping now, are designed for each of the color Macs. The adapters all list for \$795, except for a 2-bit model for the LC. That model lists for \$395 and can be upgraded to 8-bit for \$400. The Color Pivot lists for \$1995. For more information, contact Radius at 408/434-1010.

## **SyQuest Debuts 88MB Removable-Cartridge Drive**

SyQuest has introduced an 88MB version of its popular removable-cartridge hard drive, doubling the storage available in the same size drive. The new drive can read data on existing SyQuest 44MB removable cartridges (sold by a variety of vendors) *(continues)*



but cannot write to the lower-capacity cartridges. The device will be available from PLI, MicroNet, and Mass Micro, with other vendors expected to follow. The PLI drive, called the Infinity 88 Turbo, carries a \$1595 list price and was slated to begin shipping in March. For more information, contact PLI at 415/657-2211.

#### **The Expanding QuickMail**

Version 2.5 of CE Software's QuickMail lets more IBM PCs and compatibles communicate across AppleTalk networks by providing client capability for PCs on any AFP-compliant network operating system, including products from Novell, 3Com, Banyan, and DEC. In addition, version 2.5 stores a single copy of messages addressed to multiple recipients, which should provide a substantial performance boost. Pricing depends on network configuration. For more information, contact CE Software at 515/224-1995.

#### **Pushing Ahead with PostScript**

With Apple's TrueType font technology about to arrive, Adobe has made two announcements to maintain the appeal of Adobe PostScript. First, the company has licensed fonts from the German foundry Berthold and plans to release them in Type 1 format; the first three fonts should be available in March. Second, Adobe is developing what it calls Multiple Master Typefaces, which can interpolate between several versions of a typeface to provide almost unlimited variation in weight, width, size, and style. Multiple Master Typefaces should be available by late 1991. No prices were set at press time. For more information, contact Adobe Systems at 415/961-4400.

#### **Digital Font Foundry**

ATF Type Designer is a new tool for creating PostScript Type 1 and Type 3 fonts as well as TrueType fonts, Microsoft Windows screen fonts, and Next fonts. It can create font families including bold and italic; import and edit Type 1 fonts; and generate bitmapped screen fonts. ATF Type Designer also provides tools for fine-tuning hinting and for generating kerning tables. It lists for \$549. For more information, contact Kingsley/ATF at 602/325-5884.

#### **Bug Report**

WordPerfect 2.0 shipped in January with a number of annoying, though not fatal, bugs, including screen-refresh problems and difficulty opening Microsoft Word 4.0 files. WordPerfect released a bug-fix in early March and will send it to any registered user who requests it. For more information, contact WordPerfect Corporation at 801/222-5000.

#### **HP, GCC Cut Printer Prices**

Hewlett-Packard has cut the U.S. list price of the Mac version of the popular 4-ppm LaserJet IIP by

\$400 to \$2195. That configuration includes AppleTalk, PostScript, and 1.5MB of RAM. The price drop was motivated by competitive pressures, according to an HP representative. At the same time, GCC lowered the list price of its PLP II QuickDraw printer to \$999, and its PostScript-based BLP II to \$1999 from \$2399. The company said it was reacting to "expected developments." The announcements came shortly after Apple began briefing analysts and press on its new low-cost printers (see *Macworld News*, in this issue).

#### **Project Management Goes Mod**

AEC Software is redefining project-management software with task-specific modules, instead of taking the omnibus approach of most vendors. AEC's new FastTrack Resource is a \$235 package for allocating workers, equipment, and facilities. FastTrack Resource provides a sophisticated set of sorting filters and load histograms to simplify allocating and leveling resources. Its lack of task precedence and critical-path scheduling makes the package best suited for subproject managers who lack discretionary control over scheduling. AEC is also developing FilePower, a full-featured relational database with an object-oriented programming environment. For more information, contact AEC Software at 703/450-1980.

#### **The New Theme**

GeoVista is a new, easy-to-use thematic mapper for generating quick maps to elucidate simple data sets. GeoVista can only overlay three variables per map, can show only one at a time, and can't perform the relational comparisons of high-end geographical data-analysis systems. It can categorize data based on standard deviation, equal groups, or quantiles, and can save completed maps as either paint files or 32-bit color PICT files. It comes with boundary files for the United States and county boundaries for each state. GeoVista lists for \$249. For more information, contact Newton Software at 617/239-8202.

#### **On the Wire**

The AG Group is following up its EtherPeek packet analyzer for Ethernet with LocalPeek, for monitoring and troubleshooting traffic on LocalTalk networks. LocalPeek provides a separate report for each transaction by protocol level and has tools for statistical analysis. It lists for \$495. The AG Group is at 415/937-7900. Proteus Technology is preparing version 2.0 of Quota, a utility to help network administrators comply with software license agreements by controlling how many copies of an application are in use. Version 2.0 runs under MultiFinder, compiles more detailed records, and can track applications installed locally as well as on a server. It lists for \$695 for 50 network users. Proteus is at 403/426-6794. ■

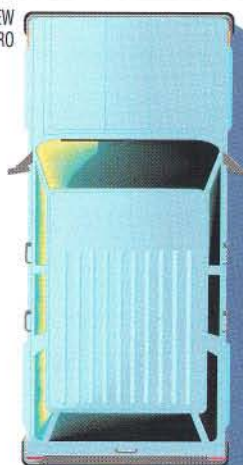


# SORRY, CLARIS. BUT IT'S DEJA VU ALL OVER AGAIN.

THE NEW  
CANVAS™ 3.0



THE NEW  
MACDRAW® PRO



Another new model year. And Canvas is still miles ahead. Lucky you. With brand new models of both the world's top-ranked drawing programs to choose from. Simultaneously.

And MacDraw® Pro isn't a bad try. In fact, it reminds us of another drawing program we've always had the utmost respect for: Canvas 2.1.

Unfortunately for Claris, our new Canvas 3.0 includes enough major enhancements to leave their latest effort idling somewhere back in the dust. Again.

**Let's take a look under the hoods.** Canvas 3.0 gives you more high-end text handling features. Like binding to curves. Slanted margins. Text-wrapping outside — and/or inside — irregular objects, and full kerning & tracking control. Even conversion of PostScript® Type 1 fonts to customizable Bézier outlines.

MacDraw Pro doesn't.

Canvas 3.0 gives you more technical drawing features. Like custom dynamic hatching. Custom parallel lines & curves. Custom dashed lines, curves & borders. Automatic dimension lines. Area & perimeter calculations. And a Smart Mouse™ drawing aide.

MacDraw Pro doesn't.

Canvas 3.0 gives you more design/illustration features. Including unparalleled Bézier curve editing power—from multi-point selection & editing to automatic object conversion, combining and blending. Magnetic guidelines. Center line auto tracing of scanned images. And full bitmap editing in 24-bit color.

MacDraw Pro doesn't.

Canvas 3.0 also gives you new built-in translators for important multi-platform formats like CGM, IGES and DXF™. And Open Architecture technology — allowing new tools, effects and translators to be added with ease at any time.

MacDraw Pro doesn't.

**You are what you drive.** Like Canvas 2.1 before it, the new Canvas 3.0 was developed in direct response to the wish lists of thousands of

drawing professionals. Its heritage of performance is proven. Its price is right. And its ease of use is legendary. Which leaves just one last question. If what you draw is important to you, why settle for Claris's sedate sedan when you can get your hands on a dream machine?

#### Note to Canvas Users:

Registered users who purchase Canvas 2.1 between Jan 1, 1991 and May 31, 1991 qualify for a free upgrade to Canvas 3.0. All Canvas 2.1 users who purchased prior to Jan 1, 1991 can upgrade to the new version for only \$99 US. Canvas 1.0 or 2.0 users may upgrade for only \$129 US. Prices valid through Aug 1, 1991. Allow 4-6 weeks for delivery. All orders add \$10 shipping & handling.

**International Users:** Please contact your local authorized

distributor for availability details.

**Trading up's so easy to do. But only for a limited time.** MacDraw users: Trade up now to the new Canvas 3.0 for just \$149 US.

Just call 1-305-594-6965 and ask for Dept. M. (Have your MasterCard, VISA or American Express card number & expiration date ready!) Or mail your MacDraw® program disk to the address below, along with your credit card information or check drawn in US dollars on a US bank. Offer limited to the US and Canada, and ends Aug 1, 1991.

# CANVAS 3.0

PRECISION DRAWING POWER FROM **Deneba** SOFTWARE

3305 NORTHWEST 74TH AVENUE MIAMI, FL 33122 PH: (305)594-6965 FAX: (305)477-5794

All illustrations were created and color-separated using Canvas™. Canvas 3.0 List Price: \$399 ©1991 Deneba Systems, Inc. Canvas™ and Smart Mouse™ are trademarks of Deneba Systems, Inc. MacDraw® is a registered trademark of Claris Corporation. PostScript® is a registered trademark of Adobe Systems Incorporated. DXF™ is a trademark of Autodesk Inc.

Circle 346 on reader service card



# Our Newest Introduction.



Color monitor illustration by Rob Mageira.

Since 1985 Ehman has been a leader in providing high quality peripherals to the Macintosh market. Our hard drives, monochrome monitors, and removable drives have been a mainstay to the industry, with a name that is well known and highly respected.

Now allow us to introduce the newest



*All hard drives come bundled with your choice of two utility software packages.*

member of our family; 20 inches of 8 bit color in a high quality, 72 DPI monitor that end users will love, and budget watchers will adore.

The new Ehman 2-page color monitor. It's as affordable as it is practical. Backed up by a one year warranty and our 30 day money back guarantee the price tag once again demonstrates Ehman's commitment to value on the most popular peripherals.

The other members of the family are all just as cost conscious. From the new super 185MB drives to our popular 45MB removable drive, as well as the monochrome monitors, you'll find our prices



# No Introduction Needed.



(MB)	20 +	30+	40Q	45+	52Q LPS	60+	80+	105Q	105Q LPS	165SW	170Q	185F	204SW	210Q	332W H/H	330WR F/H	601W F/H	660WR F/H
Internal	\$229	\$249	\$299	\$259	\$349	\$289	\$339	\$409	\$559	\$719	\$839	\$699	\$779	\$929	\$1249	\$1629	\$1849	\$2449
External	\$279	\$299	\$339	\$309	\$405	\$329	\$389	\$469	\$619	\$769	\$889	\$749	\$829	\$979	\$1299	\$1679	\$1899	\$2499
Removable 45 MB Hard Drive \$529						Color 20" Monitor \$2,987				Monochrome 19" Monitor \$895					Monochrome 15" Monitor \$495			

among the lowest in the industry, and our commitment to quality and service the highest.

Ehman has always had what you want most; affordable quality. Now with the introduction of our 2-page color monitor we also have the full line of peripherals you need most.



**Ehman  
Ships All  
Drives  
Free And  
Overnight.**

**Ehman**  
Quality Macintosh Peripherals Since 1985

Call 1-800-257-1666, Fax 1-307-789-4656

Circle 144 on reader service card



Get it together.

## "See workgroups differently with QuickMail 2.2."

### "Connect with Paris as easily as Purchasing."

"QuickMail™ users have redefined workgroups to include co-workers and clients, partners and prospects, folks down the hall or up and down the coast. It's collaborative computing with point and click simplicity. Send a message, a document, or a whole file to everyone you work with. Connect through commercial online services, remote QuickMail networks or with any fax in the world with one key-stroke. Add gateways to your mainframe, VAX™ or NetWare MHS™ TCP/IP, or X.400 networks just as easily. No other E-mail offers you this many connections."

### "Get the features that really make E-mail deliver."

"Features that make your extended workgroup easy to manage: A mail log tells you the status of all your mail—who's read it, who hasn't. Sort mail and file it in personal

mail folders so you can track conversations or projects. Retrieve messages or even 'unsend' them."

"And features that make it easy to work. The QuickMail Menu™ is always there so you can send a quick message, attach your open document or up to 90 seconds of voice mail, set up an impromptu online conference, post a notice to your whole directory or a pre-set group, or send mail for delayed delivery all without leaving your application."

### "No wonder it's the world's most popular."

"QuickMail is working for over a quarter million users in 60 countries. It got the highest E-mail rating for PC or Mac from InfoWorld, who states, 'CE Software's QuickMail reigns supreme as far as features go.' MacWeek says, 'CE Software is far ahead... offering links to more than a million E-mail users.' From MacUser, 'QuickMail is the one you should pick.' Get the message?"

### "Go to a dealer and try it."

Versions for the Macintosh® and PC. Suggested retail price: Version 2.2, 10 user pak: \$499.95. Free literature and where to buy: 1-800-523-7638, Dept. CE34.



**CESOFTWARE INC.**

*Connecting people and productivity.*

P.O. Box 65580, West Des Moines, IA 50265 USA. QuickMail and QuickMail Menu are trademarks of CE Software, Inc. All other registered and unregistered trademarks are the sole property of their respective companies.

Circle 338 on reader service card





# Laptop on My Mind

WHY WE'RE STILL WAITING ON APPLE

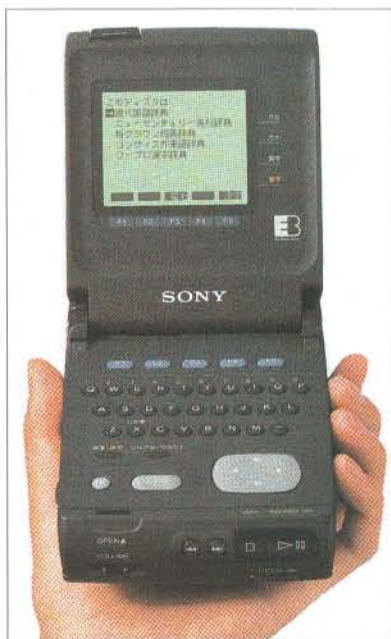
T

BY JERRY BORRELL

Two years ago, or so the story goes, a representative from Sony Corporation in Japan approached an Apple Computer executive with an extraordinary offer. He proffered to the Apple exec the specifications for a portable computer small

enough to be held in the palm of the hand. The device was based upon the Motorola 68000 processor and had a small, flat, LCD display; a QWERTY keyboard; a 125MB, 3½-inch optical drive; function keys; and a unique cursor-control device, which I'll call a virtual mouse, that allowed easy cursor control. The portable computer could be connected to large monitors. And because it was Sony, while the company was at it, the engineers thought to add a stereo headphone port so that the user could even listen to music or sound from the machine. The Sony representative offered to allow Apple the exclusive rights to market the computer if only Apple would in turn agree to provide the Macintosh Operating System for the machine.

The Apple exec, the story continues, proceeded to tell his Japanese colleague where he could put this machine. Because Apple was going to build a portable computer even more sexy. Indeed, Apple even portrayed such a computer in an internal promotion film, one of a series of such films made in the now-passé heyday of Apple's peregrine enthusiasm for Knowledge Navigator.



Sony sells its Data Discman only in Japan because Apple refused an earlier offer from Sony to port the Mac OS to the product.

Today, as we all know, there is no such product offering from Apple, while Sony is busy selling its Data Discman in Japan. At first glance the Data Discman might be discounted as a mere replacement for all those

Casio or Sharp electronic executive diaries—one of those miserably configured little devices so loved by the technically addicted, who are willing to store their diaries and phone numbers in them. On investigation, the Data Discman shows more potential. One example is its library of electronic books, which includes dictionaries, statistical references, medical references, and novels. An optical drive with 125MB allows a lot of material to be stored. Currently the Data Discman has word processing software, plus software that lets you download your address book to the Data Discman. It's this type of utility software that demonstrates what the Data Discman might have been if Apple had graced the little device with the Mac OS. I won't argue that you would want to type a memo on the device, but with 125MB of storage you could carry around your entire history of business correspondence for reference.

And if thinking about Mac users losing access to the Data Discman isn't enough to burn your grits, then you need to imagine yourself standing in the middle of an electronics store in downtown Tokyo. On making my annual hegira to Tokyo's electronics district I stood pondering the poor value of the dollar in Japan (the Data Discman costs the equivalent of \$520) and cursing Apple's decision not to make one of these little gadgets available.

(continues)



# Font Software

SAVE 10 TO 38% OFF LIST PRICE

With only one call, you gain immediate access to one of the largest assortments of Postscript® fonts. You can now spend more time designing and less time searching the country for a specific type font.

## Authorized Dealer For:

Adobe	Kingsley ATF
Bear Rock	Letraset
Bitstream	Linotype
Casady & Greene	Monotype
Compugraphic	OptiFont
Dubl-Click	The Font Co.
Image Club	Treacyfaces

MacTography Type Sampler Book

# 1-800-248-FONT



PRECISION TYPE 1-800-248-3668



47 MALL DRIVE, COMMACK, NEW YORK 11725 • 516-543-3636

\*PostScript is a registered trademark of Adobe Systems Inc.

Circle 53 on reader service card.

## Frazzzzzled By HR Record Keeping?

- Save time
- Reduce costs
- End frustration



**Users say:** "I have used two HRIS systems, and by far this is the most user friendly. With just a few hours of training anyone could use Abra MacDabra."

"Abra 2000 is straightforward and simple to use. It provides the information we need when we need it. Abra 2000 is a program for the Human Resources department, not the MIS department. And we like it that way."

### Abra 2000

- Comprehensive tracking for ten to 10,000 employees
- Over 60 standard reports
- Benefits administration
- Attendance tracking
- COBRA, EEO • From \$495

### AbraTrak

- Speeds applicant processing
- Over 40 standard reports
- Letter & labels generator
- Applicant profiles online
- Search for skill, job title
- EEO reporting • Only \$995

**Macintosh or PC Version**  
**Working Demo & Manual: \$25 per Product**  
Plus shipping (and sales tax for California orders)

Abra Mac

485 Pala Ave. • Sunnyvale, CA • 94086  
(408) 737-9454 • Fax: (408) 737-9456

Circle 54 on reader service card.

## COMMENTARY



Apple's prototype hand-held computer, as portrayed in one of the company's internal promotional films.

### Wait, There's More

Unfortunately it gets worse. Sitting not far away from the Data Discman, in the same store, was a Sony flat-panel, color LCD television. I have to admit that I had given up on color flat-panel displays because of such major drawbacks as poor contrast, dimness, awful reception, artifacts resulting from pixel dropout, and sheer weight. Then I saw Sony's latest flat-panel color LCD television, which was bright, thin, and had great picture quality and fantastic broadcast television reception. Really good.

I envisioned some capable engineer providing that kind of a color display for a version of the Data Discman, which would have made it possible for me to view all my color files from the Macintosh. I started to walk out of the store in disappointment—barely slowing down while walking past the fantastically expensive DAT recording technology—when I looked down and noted a Sony DATman. It looked rather smaller than the first transistor radio I had as a boy. It cost nearly \$600 so I was not even slightly inclined to buy it, but I did pause to listen to the CD-quality sound throbbing out of the tiny earphones attached to the device. I picked up one of the DAT tapes and, with a start, I realized that it was the same technology and format tape (8mm) that some vendors now sell as backup for the Macintosh. Each small tape holds up to 2 gigabytes of data.

I shrugged derisively as I passed the counter that held the Panasonic Dynabook laptop computer, wonder-

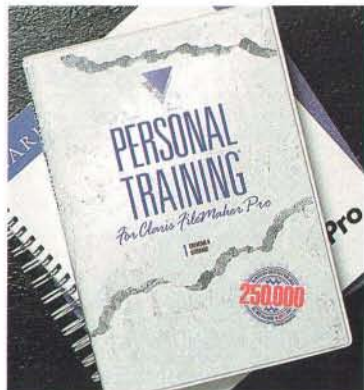
(continues)



**JUST RELEASED!**  
Personal Training for FreeHand 3.0!

# Four Ways to Recognize a More Productive Mac User

*The most obvious sign is the PTS package — usually on top of software manuals that no longer have to be read.*



*A PTS disk near the Mac — working with the real program brings real results.*

*A cassette player is a sure giveaway — because it's the only accessory you need.*



*The look of someone who just learned their Mac software in record time.*

It's a fact. The better you understand your software, the more productive you'll be. And with tutorials from Personal Training Systems, you too can be productive in record time.

A private tutor on the audio tape talks you through each new skill, while you listen, practice and learn — whenever and wherever it's convenient. And since the tutorials can be used over and over again, they're an ideal way to train an entire group.

Whether you're a beginner or an expert, there's a tutorial just right for you. Choose from beginning, intermediate or advanced tutorials for the latest versions of:

- Mac Basics
- QuarkXPress
- FileMaker
- Works
- PageMaker
- Word
- Persuasion
- Excel
- HyperCard
- FreeHand

With our 100% Satisfaction Guarantee and free unlimited Technical Support, it's no wonder over 250,000 PTS tutorials have been sold.

So if you're looking for a fast, effective and affordable way to increase your productivity, give us a call at 408-559-8635 or 800-TEACH-99.



**PERSONAL  
TRAINING  
SYSTEMS**

Just like having a private tutor!

**800-TEACH-99**

**Circle 42 on reader service card**

The following are registered and unregistered trademarks of the following companies: Apple, Macintosh, HyperCard — Apple Computer, Inc.; Claris, FileMaker — Claris Corporation; Aldus, Persuasion, PageMaker, Aldus FreeHand — Aldus Corporation; Microsoft, Excel, Microsoft Word, Microsoft Works — Microsoft Corporation; Quark, QuarkXPress — Quark, Inc.; Personal Training, Personal Training Systems — Personal Training Systems, Inc.

© 1990, 1991 Personal Training Systems. All rights reserved.

☐ Please send a FREE color catalog describing your tutorials for Mac software.  
Mail to: Personal Training Systems, 828 S. Bascom Ave., #100, San Jose, CA 95128 U.S.A. MW591

NAME \_\_\_\_\_  
COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
PHONE \_\_\_\_\_  
# OF MACS \_\_\_\_\_



# Explore Our Printer Options!



JetLink Express™, PrintLink Collection™ and Mac Daisy Link™ are Macintosh® software printer driver packages, which together support over 600 different laser, dot matrix, inkjet, and daisywheel printers.

**Printer connectivity is what we do best!**



**GDT Softworks Inc.**

PO Box 1865  
Point Roberts, WA 98281  
(604) 291-9121 or (800) 663-6222

JetLink Express, PrintLink Collection, Mac Daisy Link and the Starburst logo are trademarks of GDT Softworks Inc. Macintosh is a registered trademark of Apple Computer Inc. All names are either trademarks or registered trademarks of their respective holders.

Circle 317 on reader service card.

## PREVENT MACINTOSH THEFT!



### MacKablitz Security System

Heavy duty 10' steel cable secures and locks computer, printer, other equipment, up to 4 components. The unique **MacKablitz** system includes 2 brackets that snap into existing slots on the Macintosh or its peripherals. Additional hardware included for other peripherals that can be secured using existing screws in the equipment. **Internal component security:** **Kablitz™** fasteners secure rear panel of CPU preventing unauthorized removal of internal boards and hard drives. When the cable is passed through the fasteners the screws are concealed. When the cable is passed through all the fasteners the Macintosh system can be secured to the desk.

List price \$39.95 plus shipping. Please specify Mac, Mac Plus, Mac SE, or Mac II. Quantity pricing also available. Money back if returned in 30 days. Purchase orders accepted. Send for catalog.

**Kablitz security systems also available for most computers.**

**Secure-It, Inc.** 18 Maple Court • East Longmeadow, MA 01028  
1-800-451-7592 Dealer inquiries invited.



Circle 239 on reader service card

ing at the marketing chutzpah that allowed the company to adopt that famous name for use with a DOS-based computer. That coincidence of impressions made me think of laptop computers and of John Sculley's remarks in February, at the first Japanese Macworld Expo, to the effect that Sony would be working with Apple on new product announcements. It was juxtaposed in my mind with Michael Spindler's statements that Apple would be licensing its operating system to other manufacturers. It made me wonder what Apple's laptop would look like and whether it would be a product to amaze or one to confound, rather like the last portable.

### Stop! Don't Go!

One more pen-based computer disguised as a portable and I'll scream. Portable they are. Useful for many vertical applications they are. Portable computers, as Yoda would say, they are not.

I remember my first portable, an Epson laptop announced in 1982. It had a full keyboard (it's remarkable how millions of users can navigate most computers with only cursor-control keys), ran on D-cell batteries, and had a 5-line LCD display and a tiny, frustrating, built-in printer. I quickly tired of taking notes with a computer that produced output similar to a grocery store tape—but that device, much improved upon by Toshiba in today's laptops, was once my ideal. A notebook-size computer that slips into my briefcase.

But after seeing the Data Discman and other existing consumer products, I'd like a notebook computer to have a color display, a 125MB optical drive, and one of those incredible virtual mice. A built-in 8mm tape drive for backup would be nice for some people, but that should be optional. The computer should drive my Apple 13-inch RGB monitor when connected to an AC power source. And the connection ports should remain standard. Please, no finger pointing for cursor control, no pen interaction, no little touchpad interaction—just a solid keyboard and a mouse device.

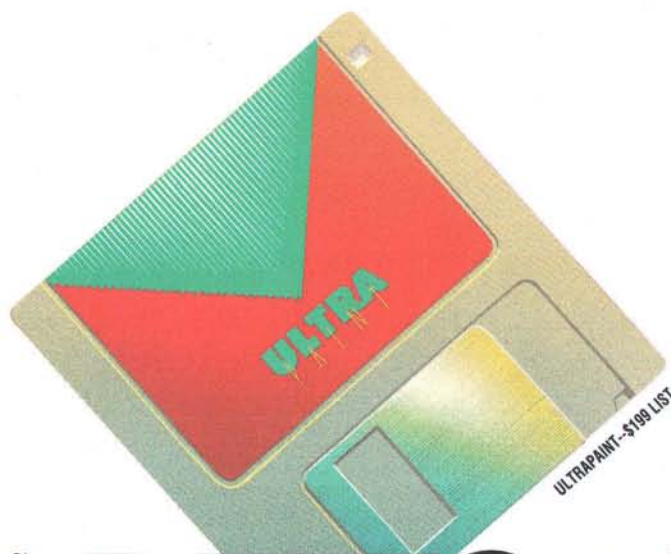
After all, if you're going to sell Apple's soul to . . . Sony, you better get something out of it. **M**





**"NEVER BEFORE HAS SO MUCH MUSCLE BEEN AVAILABLE AT SUCH A MODEST PRICE."**

THE NEW LOW-COST MACS--FROM \$999



Even before the Macintosh Classic® & its new companions came along to wow the reviewers with heroic price/performance ratios, UltraPaint was keeping them plenty busy.

"As advertised, Deneba's UltraPaint...really does set new Macintosh graphics standards", wrote Ernest Mau of CompuServe.

"...many more B&W paint features than SuperPaint, almost all of PixelPaint's color tools, a superset of MacDraw II's object-oriented features, and the gray-scale prowess of Digital Darkroom. All this comes in a single program for less than half the price...", wrote David Pogue in MacWorld.

Perhaps Chris Prior of MacUser UK summed it up best when he wrote that "UltraPaint...could prove to be the ideal software package for those looking for a powerful, all-around draw and paint program."

And it's true. UltraPaint really does offer you the

# DITTO.

same sophisticated graphics processing power of several leading programs combined — all in one inexpensive, easy-to-use package.

Open it up on one of Apple's new low-cost machines and we're talking a match made in heaven.

Particularly if you've always pictured heaven as a place where you get big muscles without having to pay the price.

## WE'LL PAY YOU \$25 FOR BEING SMART.

Purchase UltraPaint and a Macintosh Classic, LC, or IIx between October 15, 1990 and May 31, 1991, and receive a \$25.00 rebate direct from Deneba. Simply send a copy of your qualifying Mac registration card, your original UltraPaint registration card, and dated proof of purchase for both to our main address. We'll send a check for \$25 US by return mail!

See below for further details.

# ULTRA PAIN'T

LOW COST INTEGRATED GRAPHICS FROM  
**Deneba** SOFTWARE

3305 NORTHWEST 74TH AVENUE, MIAMI, FLORIDA 33122. PH: (305) 594-6965. FAX: (305) 477-5794.

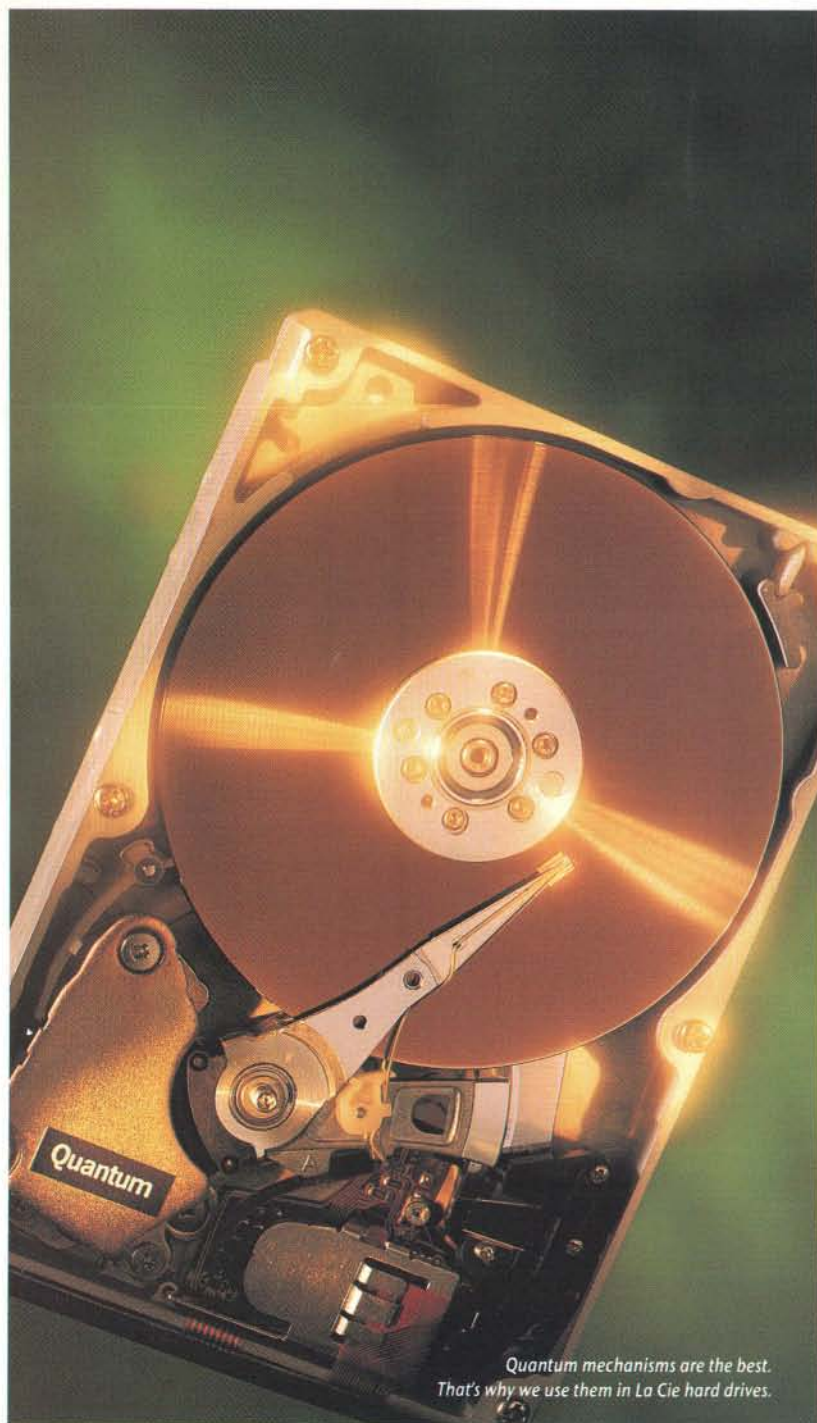
Rebate offer valid in the USA and Canada only, and limited to one (1) qualifying CPU/UltraPaint combination. Rebate cannot be combined with any other offer and is not available with specially priced educational or promotional versions of UltraPaint. Please allow 6-8 weeks for delivery. Offer expires May 31, 1991. ©1991 Deneba Systems, Inc. UltraPaint™ is a trademark of Deneba Systems, Inc. SuperPaint™ & Digital Darkroom™ are trademarks of Silicon Beach Software. MacDraw® is a registered trademark of Claris Corp. Pixel Paint™ is a trademark of SuperMac Technology. Macintosh® is a registered trademark of Apple Computer, Inc.

**Circle 57 on reader service card**





# SIX REASONS WHY LA CIE HARD DRIVES ARE THE BEST YOU CAN BUY.



Quantum mechanisms are the best.  
That's why we use them in La Cie hard drives.

---

1

---

A Quantum Difference.

Quantum drive mechanisms offer blazing-fast effective access time as low as 8 milliseconds.\* No other drive mechanisms in their class (Mac®-compatible) run faster, which is why they are in La Cie drives.\*\*

\*Typical application access time using 64KB DisCache®

\*\*Seagate drive mechanisms also available (capacities from 300MB to 1.2GB).

Tsunami, Silverlining, La Cie and the La Cie Ltd. logo are trademarks of La Cie, Ltd., a Plus Development Company. All other trademarks are the property of their respective owners. All prices, specifications, terms, and descriptions of products and services herein are subject to change without notice or recourse. La Cie, Ltd. 19552 SW 90th Court, Tualatin, OR 97062. Phone (503) 691-0771, Fax (503) 692-8289. © La Cie, Ltd. 1991 All rights reserved. Printed in U.S.A.



2

## Software with a Silverlining.

Every La Cie drive includes a FREE copy of Silverlining, the #1-rated hard drive management utilities program.

Silverlining drivers can get 30% more speed from a drive than the competition. It works with any true SCSI drive, internal or external. So one program can manage it all. Plus,



MacUser says, "Silverlining is one of the most powerful and useful hard disk utilities you can find—most Apple engineers prefer it to Apple's own."

Silverlining optimizes your data so it's consecutive on your drive, which makes your applications run faster.

And, Silverlining drivers are intelligent. They test the drives' functionality at startup to ensure that everything is working properly. If it's not, it protects you.

For even more protection, every La Cie drive includes a FREE copy of Norton Utilities® for the Macintosh. It automatically diagnoses, reports and repairs common and dangerous disk problems. Silverlining and Norton Utilities are regularly priced at \$149 each. So, you get software worth almost \$300—ABSOLUTELY FREE—when you buy a La Cie drive!

3

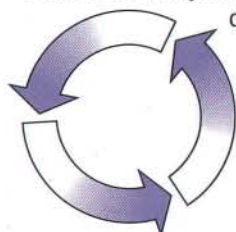
## A Company You Can Count On.

La Cie is a Plus Development Company (makers of the Hardcard® XL), backed by \$400 million in assets. That means you can trust La Cie to provide a constant source of high-quality mechanisms and components. And you can be certain that we'll be around to help you with service and support. For a long, long time.

4

## The Most Unusual Warranty in the Business.

La Cie features a RENEWABLE 2-YEAR LIMITED WARRANTY.† If anything goes wrong with your La Cie Quantum drive within two years, we'll repair or replace it within 48 hours—and then renew your warranty for another 2 years. Free of charge!



Every La Cie drive is backed by toll-free support from customer service and technical assistance experts.

†Restrictions apply. Please contact La Cie for complete warranty information.

5

## Award-Winning Design.



Hard drives that win design awards? Who says intelligence has to be ugly? The Tsunami and Cirrus hard drives have received prestigious awards from both the industrial design and computer communities.

La Cie drives are designed from the inside out. Designed to be quiet (with a ½ speed fan), lightweight (as light as 2½ lbs.), durable and reliable. Plus, they have an external termination and SCSI address switch, which means you'll never have to open the case for any reason! You don't win awards for these features, but you do win a loyal following.

6

## Rave Reviews from Critics and Customers.

Frankly, there's been a lot of talk about La Cie hard drives.

Leading Macintosh consumer magazines praise us.

Customers write us fan letters. In fact, we're happy to let critics and customers have the last word about La Cie drives. Because they tend to be words like these:

★★★★★ —MacUser

"...the cream of the crop." —Macworld

"Of all the drives tested we recommend La Cie's drive." —MacUser

"This is an excellent drive and Silverlining is great!" —D. Jordan  
Burbank, CA



La Cie offers internal and external hard drives from 40MB to 1.2 Gigabytes. Choose from the award-winning Tsunami, Cirrus, ZFP Family and Internal drives. Plus, La Cie now offers the Bacster, a hard drive that attaches directly to the back of a Macintosh Plus or SE.

AS LOW AS  
**\$299**

To order or for more  
information, call toll-free  
**800-999-0143, ext. 55**

**LACIE**  
LIMITED  
A PLUS DEVELOPMENT COMPANY

Circle 199 on reader service card

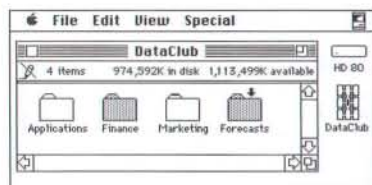


# "How is DataClub Different from TOPS?"

DataClub™ is a breakthrough in file server software. It overcomes the limitations of TOPS® conventional peer-to-peer architecture to give you a network that's more powerful, more reliable, easier to use, and easier to expand.

The key is DataClub's new Virtual Server™ technology, which uses available resources around the network to create one powerful, shared disk that is centrally managed and maintained. And this makes a big difference for you.

## With DataClub:



The DataClub window opens just like any other disk – only it's shared and secure.

*"TOPS used to be the simpler, cheaper network, but DataClub beats it on expense and setup simplicity."*

Phillip Robinson  
San Jose Mercury News

<b>Folders are always available</b>	DataClub gives users access to the entire shared file system 100% of the time.	On a TOPS network, mounted folders disappear when machines shut down or leave the network.
<b>Files are easy to get to</b>	All files and folders are found under the single DataClub icon.	With TOPS you have to spend valuable time mounting and searching multiple volumes.
<b>Location transparency</b>	DataClub's Virtual Server technology allows users to access data without having to know on which machine it's physically stored.	TOPS users must know where a file is physically stored in order to access it.
<b>No need for publishing</b>	Just store files under the DataClub icon, and they're available to the network.	TOPS requires all data to be published before it can be shared.
<b>Unlimited scalability</b>	Thanks to its Virtual Server technology, an expanding DataClub network retains its simplicity and actually grows more powerful.	As peer-to-peer systems like TOPS grow, they become more and more unmanageable.
<b>Add users without reconfiguring</b>	DataClub automatically reconfigures the network whenever hardware is added or removed.	On a TOPS network, users have to mount volumes manually every time a new user or disk is added.
<b>Centralized backup</b>	You can back up a DataClub network quickly, easily, and more often – because all shared information can be backed up from any Mac, at any time, without interruption to the system.	By contrast, TOPS requires individual back up of each node.
<b>Nine levels of security options</b>	DataClub provides the highest Apple-approved security you can get – nine levels.	TOPS offers just one.
<b>One password per user</b>	With DataClub you only need one password per user.	With TOPS you need a different password for each folder, adding more confusion than security.
<b>Centralized registered users</b>	DataClub lets you create a single set of users and groups which is valid for all Macs and disks on the network.	TOPS has no support for registered users and groups.
<b>Complete AFP compliance</b>	DataClub complies fully with the AppleTalk Filing Protocol standard.	TOPS does not. So DataClub is compatible with more applications – especially multi-user databases.
<b>Lower cost</b>	Though it's much more capable, DataClub actually costs you less – one third the price of TOPS. And even less than that on larger networks.	Any way you look at it TOPS costs you more time and money.



DataClub's Virtual Server appears as a single, centralized file server and gets more powerful as it expands.

## TOPS Upgrade Offer

Upgrade to a DataClub 3-pack for only \$124.76 (only \$42 per user). Just call us toll-free with your TOPS serial number, or send/fax us the first page of your TOPS manual. Limit two per customer.

This is a limited-time offer\* – so don't wait! Whether you're new to networking or are looking to improve on what you have, place your DataClub order today with a toll-free call. And get network performance that can't be topped!

**800-735-1776**

Circle 221 on reader service card

# DataClub

DataClub is a product of International Business Software. 1270 Oakmead Parkway, Suite 314, Sunnyvale, CA 94086 Phone 408-522-8000 Fax 800-733-2811 or 408-720-0289. TOPS is a registered trademark of Sitka Corp. All products and brand names are the trademarks of their respective holders. \*This offer may be canceled at any time without prior notice.





# LETTERS

## No Apple for the Teacher

**T**hank you for your *Commentary* in the January 1991 issue of *Macworld*, a column that reminded us all that the Mac cannot do everything, that we all have wish lists for what the Mac might become.

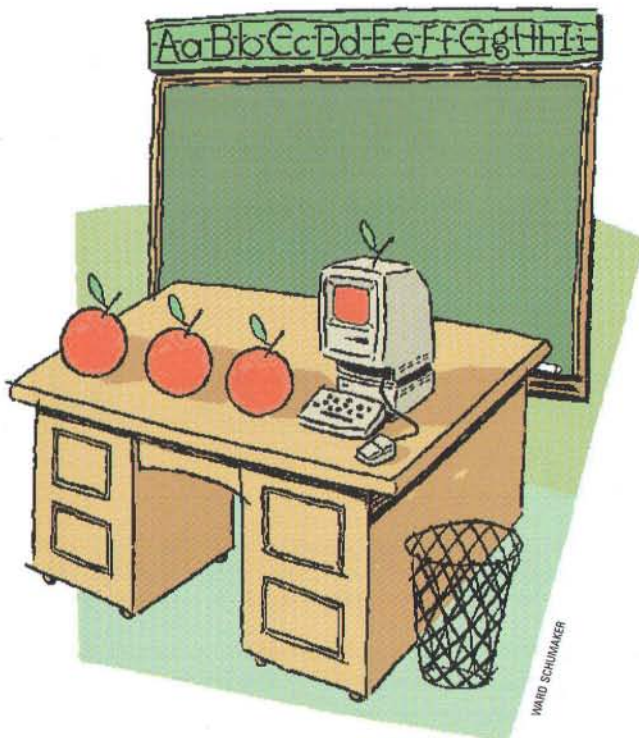
As a teacher and a Mac fanatic in a small school in rural Maine, I wish for some peace to play on the Mac. The students have taken control of the machines, of the learning in the building—of the building itself if they could. They appear before seven in the morning and leave at ten at night. They clean the room, they form committees, they buy equipment.

Sounds great? When does the poor old teacher get to play? While you want more, my only wish is for the chance to catch up with the students, if only for a moment.

Roger Fuller  
Sebattus, Maine

## Incorporating the Copyrighted

**T**hank you for your article "The Future of Television and Computers" [*Commentary*, February 1991]. Some of us have already come up against the copyright beast. If we author HyperCard stacks that quote other sources (such as textbooks) or use graphics that we did not create, we have copyright problems. Do you foresee



the same problems when we begin to grab and store frames from the evening news or from that terrific "Nova" or "National Geographic Special" and incorporate them in stacks or other literature? Will we again be shaking a stick at the copyright laws?

Pat Ralston  
Indianapolis, Indiana

Generally speaking, appropriating images, text, or music for personal or home use should not present a problem, but distributing multimedia creations that use copyrighted material without permission is prohibited. A copyright attorney can offer more details.—Ed.

## Jasmine's Injustice

**I** am disappointed and angry that you choose to continue carrying Jasmine

ads when so many of your readers have been savaged by this company. I bought a Jasmine Direct Drive 20 in October 1988 for close to \$600; it failed within months. After three additional failures, two repairs, and a loaner, the drive was returned to Jasmine in July 1990, and by then Jasmine had had the drive longer than I had. In October 1990, I received a letter from Jasmine saying the company would *not* repair the drive, would not return it, and I should buy another for \$299. It is obvious Jasmine doesn't care a tinker's damn for its customers. Apparently, neither does *Macworld*, caring instead for the advertising dollar over integrity.

Claire Farrer  
Chico, California

## Corrections

The correct telephone number for Automated Printing Technologies, maker of Search (New Products, January 1991) is 309/692-1530 ext. 282.

Correct pricing for Micro Dynamics' MD Mars System ("The Big Squeeze, January 1991") starts at \$70,000.

Etch A Sketch (News, January 1991) is manufactured by The Ohio Art Company.

Network SuperVisor ("Managing Networks," February 1991) can scan information from any individual workstation connected to the network and that has the SuperVisor Responder installed, and does not need an E-mail form or application.

The correct phone number for Metrum Information Storage (Where to Buy, February 1991) is 303/773-4700.

The correct price for *Finale* (State of the Mac, March 1991) is \$749.

Christopher Cann is not connected with Image Enhancements (News, March 1991). Neither Dr. Cann nor the University of California, San Francisco, has any connection with the company.

Storage Dimensions' MacinStor ZFP hard drive ("Midrange Hard Drives," March 1991) has a plastic (continues)



Apple is about  
to change  
your perception  
of inexpensive  
printers.



It used to be if you wanted a genuine Apple® printer (and all the privileges that go with it), you basically had a choice between two extremes. You could spend a little and get an ImageWriter® II. Or you could spend a lot and get a LaserWriter®.

Not anymore. As of today, Apple offers a complete family of affordable printers:

The new Apple StyleWriter® is a 360-dpi laser-quality printer that combines a price almost anyone



*With the addition of the new Apple StyleWriter and Personal LaserWriter LS, everyone has the right to a great image.*

can afford with the kind of innovations only Apple can deliver. It's small. It's quiet. It utilizes TrueType™ (Apple's new font technology that lets you scale and print characters smoothly and precisely, from the smallest footnote to the most enormous headline). Yet it costs just \$599\*. So it's great for students, people working at home, small businesses, or anyone who needs confidentiality when they're printing.

The new Personal LaserWriter LS is a full-fledged, no-compromises, four-page-per-minute LaserWriter. It uses a built-in, high speed serial port, so it won't be slowed down by complicated pages. It also incorporates TrueType. It prints in the background, so you can be working at the same time it is. And it offers a major breakthrough for a LaserWriter: a price of just \$1299.

And while our other laser printers aren't new, many have new, affordable prices:

The Personal LaserWriter NT is our least expensive, networkable PostScript® LaserWriter. It's ideal for complex graphics. And for small groups of people.

The LaserWriter IINT is our most popular PostScript LaserWriter. A workhorse that prints up to eight pages per minute, and one that can be upgraded to a IINTX.

The LaserWriter IINTX is our highest performance, expandable PostScript laser printer. One that's become the benchmark against which all other printers are measured. And that, on a large network, is actually our most affordable printer.

Of course, there's also the trusty ImageWriter II. It's a dot matrix printer that's been proven to be extremely reliable. It's capable of working over a network. And it's still the best bet for running multiple-part and continuous forms.

Your authorized Apple reseller will help you find the one that's right for you. If you need help finding a reseller, give us a call at 800-538-9696, extension 615.

Because now more than ever, everyone has the right to a great image. The power not just to look your best. The power to be your best.®



©1991 Apple Computer, Inc. This ad was written, designed, typeset, planned, rewritten, approved, budgeted for, rewritten, and produced on a Macintosh®. Apple, the Apple logo, ImageWriter, LaserWriter, Macintosh, StyleWriter, and "The power to be your best" are registered trademarks, and TrueType is a trademark of Apple Computer, Inc. PostScript is a registered trademark of Adobe Systems, Inc. \*Prices shown are suggested retail. But who pays retail anymore? And speaking of paying, your dealer can even help you arrange financing.





case, and its dimensions are 9.75 inches wide by 2.8 inches high by 10.5 inches deep.

The following products on the "Hard Drive Speed Tests" chart ["Midrange Hard Drives, Just Right," March 1991] should have been designated as being among the fastest 10 percent: the Club Mac Hard Disk 170 for Save; the FWB hammerFMF 155 for SCSI Evaluator Read, SCSI Evaluator Write, and Seek; the Microtech Nova 120 for Seek. The SCSI Evaluator we used measures seek time over the entire geometry of a hard disk. The FWB hammerFMF 155 is a 300MB hard drive that formats to hold only 155MB, reducing the area on the disk that the head must search to find data.

Retesting the drive, with an FWB test utility that takes the reduced data storage area into account, gave us a faster seek time of 8.6 milliseconds.

David Rumpf used Canvas to create Cellular Design ("Great Graphics," March 1991).

The correct price for the Athena A50 50MB portable hard drive (New Products, March 1991) is \$899.

The Expanse NB4 and Expanse II products from Second Wave (New Products, March 1991) are expansion chassis with an internal power supply, fan, and logic board.

The correct phone number for Liberty Systems (Where to Buy, March 1991) is 408/243-2885; fax 408/983-1127.

The correct telephone number of It's Alive, the publishers of IA Media-Tracks Guides (New Products, February 1991) is 617/437-7965.

.....

#### Jasmine Does Good

The Jasmine of old may have had its share of troubles. I have had nothing but good service from the company, and I see no reason why it shouldn't continue. Assuming the parent company (Chess) wants to maximize its investment (and standard business logic dictates it should and will) the new Jasmine will surely strive to win back their lost market share with better than average pricing (which is happening) as well as outstanding customer service,

which, as I have related, has happened with me.

Roger Krost  
Pasadena, California

#### Turning the PageMaker Text

The review of PageMaker's and QuarkXPress's rotation abilities ["Page Wars," February 1991] made it sound as if text could not be edited once rotated in PageMaker. Text can be edited after rotation, very easily.

Using the Text Rotation feature under the Elements menu, rotate the text. While the text is still selected, press ⌘-E to get into Story view. Select the text with the I-beam that automatically appears, then edit it to your heart's delight by selecting attributes from the (continues)

**Salient**

Double the space on any Mac disk by shrinking any Mac file or folder an average of 50%.

**MacUser**  
"Disk Doubler rates as the best of its kind"  
Steve Bobker, Contributing Editor, MacUser

**Disk Doubler**

**Free  
Millions  
for \$79.**

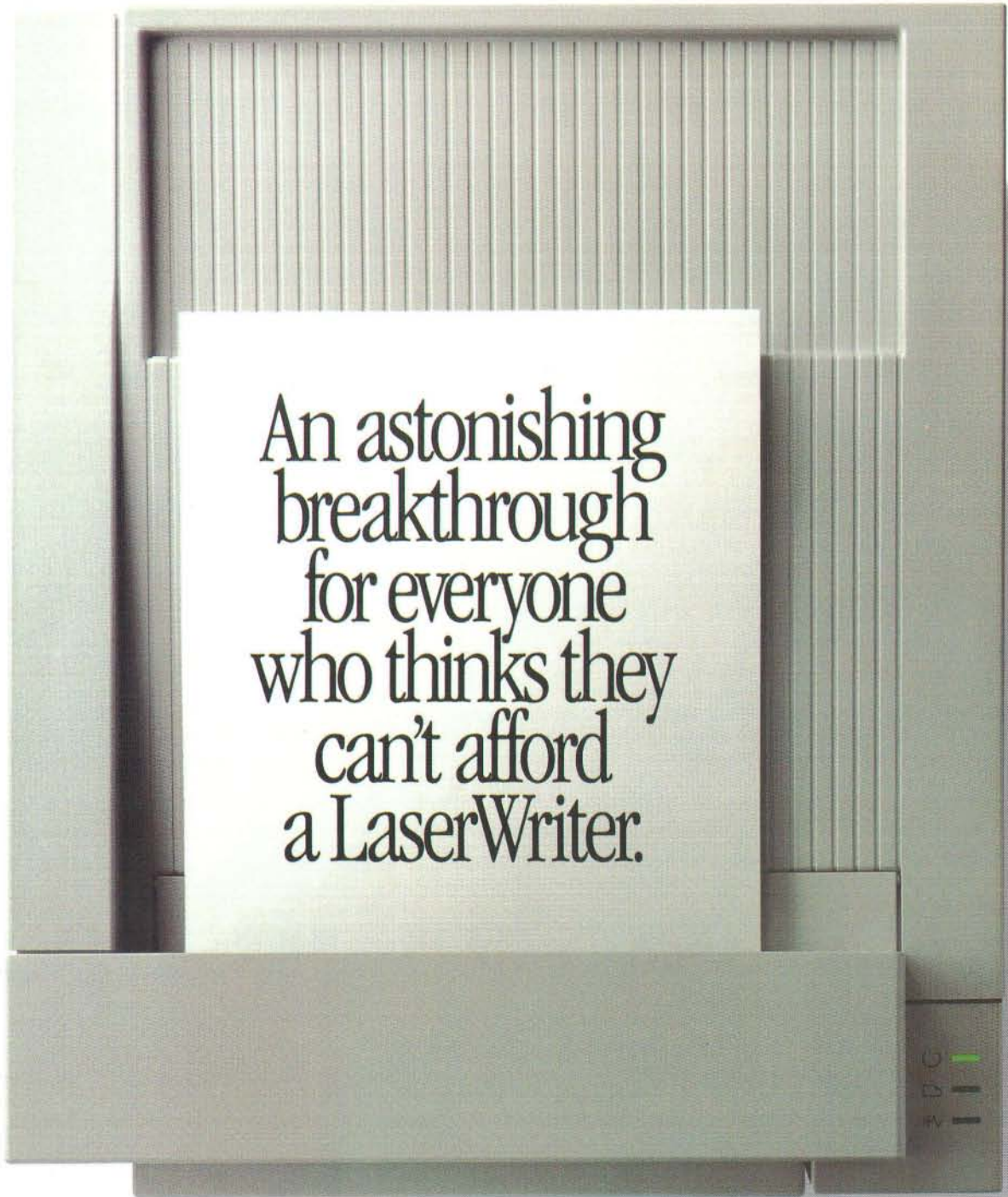
Reclaim megabytes of disk space with DiskDoubler.

Available at leading software stores. Salient Software, Inc., 124 University Avenue, Palo Alto, CA 94301 (415) 321-5371

DiskDoubler is a trademark of Salient Software, Inc. © 1990.

Circle 39 on reader service card.





An astonishing  
breakthrough  
for everyone  
who thinks they  
can't afford  
a LaserWriter.

*The new Personal LaserWriter LS.*



At just \$1299,\* it's the most affordable LaserWriter® in our history. But don't let the low price fool you. Inside is a full-fledged, no-compromises Apple® LaserWriter.

It cranks out up to four pages per minute. It has a built-in, high speed serial interface, so it won't be slowed down by complicated pages. It incorporates

our new TrueType™ font technology, which lets you scale and print characters smoothly and precisely in almost any size type. It prints in the background, so you can be working simultaneously while it is.

And it was designed to let you get everything out of your Macintosh® that Apple builds into it.

Now more desktops can have the power of a LaserWriter. The power to be your best.®







Type menu. When you're finished, click the Story window close box.

*Deb DeCosta  
Manchester, New  
Hampshire*

### Nisus Number Power

I was very glad to read Steve Cummings's favorable review of Nisus 3.01 [Reviews, February 1991]. However, there is one important point where the review was in error. Mr. Cummings stresses that there is "one useful feature conspicuous in its absence—a word-count routine." Actually, Nisus gives the user two different methods of obtaining a word count. The first method is to simply select the Get Info menu command. The resulting dialog box provides word counts

and gives the total number of characters, average word length, number of sentences, and a plethora of other statistics. Additionally, the Count Words macro supplied with Nisus demonstrates the power of Nisus's macro-programming language by replacing each word with itself; the total number of substitutions is therefore the true word count.

*Todd Cranston-Cuebas  
San Marino, California*

### Index Inquiry

I would appreciate it if you would initiate an annual index of product reviews, articles, and subjects.

*James Gardner  
Moss Beach, California*

To receive your own copy of Macworld's 1990 index by mail,


send a self-addressed, legal-size envelope with 75 cents postage to Index, Macworld, 501 Second St., San Francisco, CA 94107—Ed.

### Punchdown Blocks Uncloseted

Thank you for the great article about networking ["Networking for the Novice"], which appeared in the December 1990 edition of your magazine. It was really helpful to me, a network novice, but there is still one thing I do not understand. What is a punchdown block?

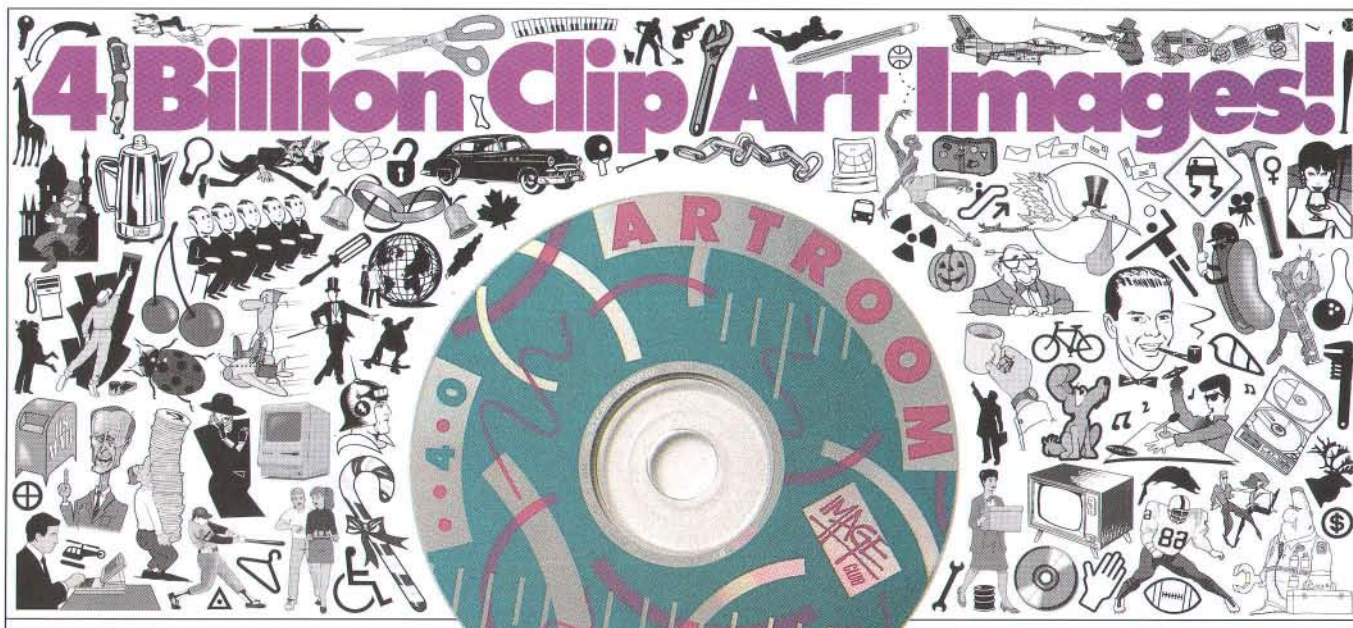
*Kaya Bush  
Maulburg, Germany*

A punchdown block is a wall-mounted telephone-wiring distribution block used to connect many pairs of wires, and in the case of an electronic network,

to link the wires to a central "brain" that manages the network. Though no doubt with the right materials and instructions you could build your own punchdown block, your local telephone company should be able to tell you where you can obtain one, since many office buildings use them to centralize their phone and electronic systems.—Ed. 

.....

Letters should be mailed to *Letters*, Macworld, 501 Second St., San Francisco, CA 94107, or sent electronically to CompuServe (70370, 702) or MCI Mail (284-8078). Please include a return address. We regret that, due to the high volume of mail received, we're unable to respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of Macworld.



# 4 Billion Clip Art Images!

**OK, so we don't have 4 billion yet, but we have over 4000 fabulous encapsulated PostScript® (EPS) images. No other clip art collection has such a fantastic variety of dynamic, sophisticated & hilarious images. All of our graphics have been individually created by professional artists with your editing, coloring & ease of use in mind. Regular upgrades to the CD ROM keep your library current & your clip art purchasing decisions simple. At \$799, this is the best professional clip art value anywhere. Available from software dealers everywhere. Individual volumes on diskette are \$99 per volume.**

**Buy the entire collection on the ArtRoom for \$799. CD ROM or diskette.**

**IMAGE CLUB GRAPHICS INC** SUITE 5 1902 ELEVENTH STREET SE CALGARY ALBERTA CANADA T2G 3G2 PHONE 403 262 8008 FAX 403 261 7013 APPLELINK CDA0573

**WORKS WITH THESE MACINTOSH PROGRAMS**


**EDIT WITH:** Adobe Illustrator®, Aldus Freehand™, Denisa Gausar™, 3D PLACE INTO: Aldus PageMaker®, QuarkXPress™, Letraset DesignStudio™, Aldus Persuasion™, Letraset Roadshow™, Silicon Beach Personal Press™, Timeworks Publish It!™, Pagemaker® for Macintosh, Ventura Publisher®

**WORKS WITH THESE IBM PC PROGRAMS**

**EDIT WITH:** CorelDraw® for Windows

**PLACE INTO:** Aldus PageMaker® for Windows, WordPerfect®, Ventura Publisher®, Ventura Publisher® for Windows, Augus™ Publishing System

**Order today. Call 1800 661 9410.**





An astonishing  
breakthrough  
for everyone who  
still thinks they  
can't afford  
a LaserWriter.



### *Introducing the Apple StyleWriter.*

At \$599\*, the new Apple® StyleWriter® offers laser-quality printing for about the same cost as that of a dot matrix printer.

And while the StyleWriter calls attention to your work, it won't call attention to itself. It's small (just 13" wide by 8" high by 5" deep). It's quiet. It utilizes Apple's new TrueType™ font technology, so you can scale and print characters

smoothly and precisely in any size type, from the smallest footnote to the most enormous headline. And when you hold pages printed on the StyleWriter next to those from printers costing thousands of dollars more, you'll be hard-pressed to tell the difference between them.

So what if you can't afford a LaserWriter®? You've still got the power to get the most out of your Macintosh®. The power to be your best.®







RasterOps 8LC Display System and 24si Display Board

Ad produced on the Macintosh



©1990 RasterOps Corporation. Brands and product names are trademarks or registered trademarks of their respective holders.

## INTRODUCING THE COOLEST NEW DISPLAY SYSTEMS FOR THE HOTTEST NEW MACINTOSHES.

Every time a hot new Macintosh® computer is announced, we're out there first with the coolest technology in display systems.

We custom design our VLSI chips and use surface mount technology to create display systems that are smaller, smarter and so power efficient they run at temperatures cooler than Apple's recommended standards. That means your computer will live a longer life.

But technology isn't the only area where RasterOps boards are cool. Consider our new display systems.

For the Macintosh IIx, we present the 24si board. It's a single slot board



Our 24si board delivers 24-bit True Color with built on acceleration to the Macintosh IIx.

with built on acceleration that brings brilliant 24-bit color to any Apple 13" monitor up to 600 times faster than before.

For the Macintosh LC, the ClearVue/LC is an unbeatable monochrome system. The ClearVue/GSLC brings you the highest resolution gray scale. The 8LC display system puts 256 brilliant colors at your fingertips. And the affordable ClearVue/LC Monochrome and ClearVue/GSLC display boards bring high image clarity to the 15" Apple Portrait Display.



Our new 19" display systems bring 8-bit color, as well as monochrome and gray scale, to the Macintosh LC.

So see your RasterOps dealer or call 800.468.7600. And be prepared for chills to run down your spine.

### RasterOps®

THE ART & SCIENCE OF COLOR™







# ART BEAT

by Cathy Abes

The tools and the talent behind Macworld's graphics and the techniques that make them possible

**Artist:** For the artwork opening our feature on color trapping, Macworld associate art director Sandra Koenig used a collage of letters in a variety of fonts and sizes to illustrate trapping techniques. By adding a thin sliver of color to the edge of an element, trapping prevents the unsightly white spaces between two adjacent color elements, caused by press misregistration. Koenig needed to show a bitmap letterform on a patterned background, light-color letterforms on a contrasting (darker) background, and letters that straddled both white and colored backgrounds. She used trapping techniques in creating all the letters.

**Hardware:** Mac IIcx with 8MB of RAM and an 80MB internal hard drive.

**Software:** Aldus FreeHand 2.0, Adobe Photoshop.

**How It Was Done:** The artist began by formulating a composition, then creating rough sketches in FreeHand. When she was ready to start the actual illustration, she first drew a black box in FreeHand. Then she assigned a process-color line and fill of red and cloned the rectangle. She used the scale tool to resize



The illustration that opens the feature "Setting Traps," on page 159.

the clone to 50 percent, and changed the fill to white and the line to none, to create a small white box in the lower right corner of the red rectangle. Then she cloned the white box, moved the clone to the upper left corner, and aligned all the boxes.

Now she was ready to create all the letterforms (except the green *T* and the *M*, which were done in Photoshop). To create the wavy line of letters, Koenig first typed them in with the type tool, then in the Type Specs box assigned a process color, and with the line of type selected, dragged its anchor points to letterspace it. Next she created a path with the freehand tool, then selected both elements and joined them. Koenig used the scale tool to make the *e* and the *S* the exact height and width she wanted. For the *Z*, she first used the scale tool, then angled the

letter with the skew tool, and finally, used the rotate tool to place the letter in the correct position. After Koenig created all the letters, she put each one on a different layer to create an overlapping effect.

Next Koenig used Photoshop to create the backgrounds for the two upper boxes. She gradated the pink one and selected the Noise filter (under the Image menu) several times to add texture. To create the other box, she chose black and dragged a wide brush across the box (first Shift-clicking to get a straight line). Then Koenig selected the whole image and selected the Blur filter (Image menu) to soften the stripes' edges. After adding noise for more distortion, she lowered the brightness by selecting Adjust Brightness & Contrast from the Adjust submenu (Image menu).

Still in Photoshop, Koenig used the type tool to

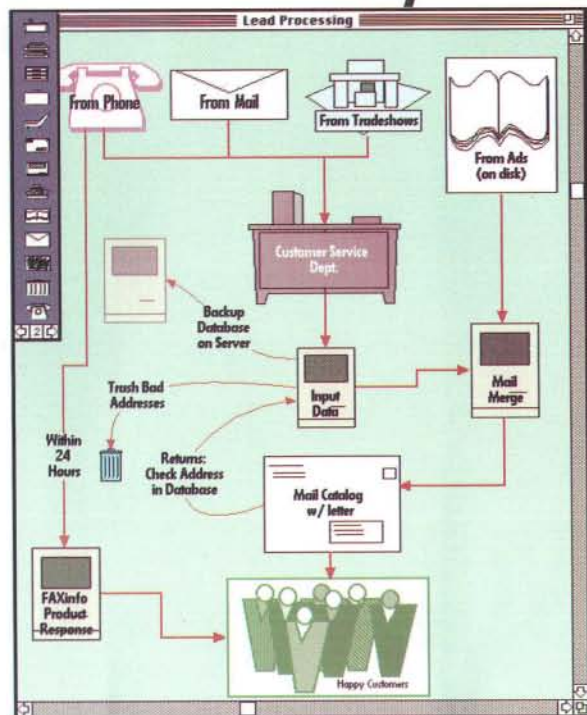
create the large *T* in 72-point Oblong Bold and made it a brighter green to contrast with the muted striped background. To make the *T* large enough to overlap several of the stripes, Koenig selected Stretch/Shrink under Effects (Image menu). After creating the *T* in Photoshop's RGB Color mode, she switched to CMYK Color and saved the letter as an EPS file. She followed the same process for the red gradated background and the black *M* on the white background.

Then Koenig placed each Photoshop file into FreeHand, sized the images, and moved them into place. She used FreeHand's Paste Inside command to place the striped rectangle within the white box in the upper left corner, which she had originally created in FreeHand. This was a quick and easy way to shrink the striped box to exactly the right size, since pasting inside kept the striped box from extending past the borders of the white box.

Finally, it was time to put the color trapping techniques to use on each of the letterforms. Before the wavy line of type could be trapped, it had to be unjoined from its path by selecting Split Element under Special (Element menu). With the letters selected, Koenig chose (*continues*)



# Make It Perfectly Clear!



## It's not just a flowchart, it's your next promotion...

When your career is on the line, you need help to develop and present better ideas. Your solutions to complex problems! Look good by clarifying complicated situations and move yourself higher on the promotion list.

Use **MacFlow**, the leading Macintosh flowchart package, to develop, display or document any process without tedious drawing. MacFlow helps you develop an overall view of your work, project or logic flow. Simply drag pre-drawn symbols into place and connect them with flow lines. Move symbols about and lines stay connected. Automatically create right-angled or curved lines. Modifications are just as easy! Export your flowchart to a desktop publishing program for a report or use it in a presentation.

Present your team's organizational structure. Design and document your manufacturing flow. Or tackle the paper workflow in the office. Explain complicated situations. Eliminate misunderstandings today that could become big problems tomorrow!

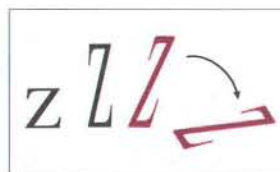
Get MacFlow today — because making it perfectly clear could just get you that next promotion.

Give MacFlow a try before you buy. Fax your name and address to (818) 991-4587 for a FREE catalog and MacFlow demo disk.

## Mainstay

5311-B Derry Ave. Agoura Hills, CA 91301 (818) 991-6540  
71 rue des Atrebatres, Brussels, Belgium 322/733.97.91

Circle 284 on reader service card.



The Z was created with the type tool, scaled, then angled with the skew tool, and finally rotated into the desired position.



To create the striped box, Koenig painted black lines with a wide brush over a green background (Shift-click and drag), then used the Blur filter and the Noise filter to add texture, and lowered the brightness for a muted effect.



After cloning the Z, the artist set a half-point stroke and checked Overprint, then cut the clone. Next she made an invisible clone of the red box and pasted the cloned Z inside the cloned box. As a result, the original Z (which overlapped only the color background) was trapped, while the clone (which extended into the white) was not. Here you can see the original T and S without their clones and the Z with its clone.

Type Specs under Effects, and then selected Fill and Stroke. She then set a half-point stroke the same color as the fill, and checked Overprint.

A special, more complex trapping technique was used for three of the letters that overlap white and color backgrounds—the S, the Z, and the pink T—since only the part of each letter adjacent to the color background was to be trapped. First Koenig cloned the original letter, in this case, the Z. Then in the Type Specs dialog box (Type menu), she chose the same fill, stroke, and overprint settings as she had for the other letters. Next she cut the clone. Then Koenig selected the large red rectangle and cloned that. After selecting None for both Line and Fill (Fill menu) to create a clear, invisible rectangle, she used the Paste Inside command to paste the cloned letter Z inside the invisible cloned rectangle. As a result, the original Z (which did not extend past the color background) was trapped, while the cloned Z (against the white background) was not. **M**



*Design it to fit my hand*

*Put the button where I can reach it.*

*Light up the lock button so I know it's on*

# Silhouette

Put your hand on the EMAC Silhouette™, and you'll know this isn't like anything else for your Mac. Even at prices far beyond our \$99.95

introductory price.

**To avoid the temptation of compromise we asked people like you to design it.**

The Silhouette is the ideal blend of form and function. Because it was designed by people like you. People who use a Mac. People who were tired of being forced to fit the hardware.

That's why it looks and feels so different. And why you should go try it for yourself today.

Call EMAC at (800) 821-0806, extension 2155 or (415) 683-2155 for the dealer nearest you.

Just make sure you get your hands on one.

**EMAC**  
More for your Mac

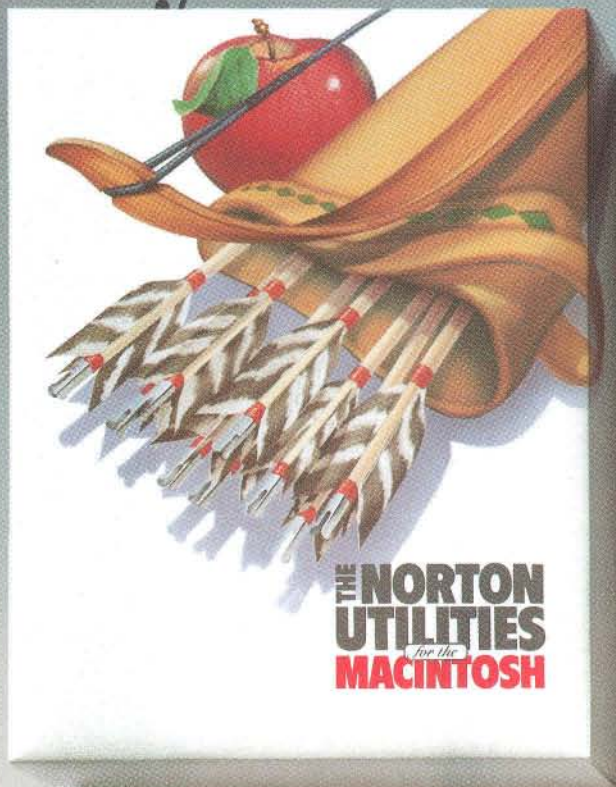
*Let me grab the ball for accuracy*

Circle 68 on reader service card

Silhouette, EMAC, the EMAC logo and "More for your Mac" are trademarks of Everex Systems, Inc. Other brand names and product names are trademarks or registered trademarks of their respective companies.



# Any resemblance to other Macintosh utilities is pure coincidence.



If that sounds like an outrageous statement, it sure is.

But then, this is one outrageous set of utilities.

In fact, comparing the Norton Utilities™ for the Macintosh® to anybody else's utilities for the Macintosh is, well, kind of embarrassing.

Because when it comes to fixing your disk problems, rescuing your data and daily getting the utmost from your Mac®, nobody else even comes close.

## Why you need a Doctor in the house.

To see what we mean, see what happens when you call up our revolutionary *Norton Disk Doctor*®.

Which is what you'll do whenever you're having trouble doing things like booting your system, recognizing or reading disks, opening, closing or trashing folders, locating icons or launching applications.

The Disk Doctor automatically diagnoses and repairs the 45 most common—and dangerous—

problems your disk can confront you with.

Including a whole bunch of things the other guys can't even detect, let alone repair.

Which is one reason why—unlike other programs—we don't display hair-raising mes-

sages warning you of the "Risk of losing data" from using our utilities.

## We save your trash.

Of course, any time a human being uses a computer—yes, even a Mac—there's a risk of losing data.

Which is why, seven years ago, Peter Norton Computing invented the legendary *UnErase*®.

Like the rest of the tools in this box,

*UnErase* has been designed expressly for the Mac, to

recover more kinds of trashed files, more quickly and with less effort on your part than any other program.

You can *UnErase* by File Type. By Text Search. Or use Quick *UnErase* to scan your fully loaded hard drive in as little as five seconds.

(You don't even want to know how long it takes everybody else.)

Whether your drive is fully loaded or nearly empty, *Speed Disk*™ is—here we go again—the quickest, easi-



est and safest way to dramatically accelerate disk access.

And unlike other programs, *Speed Disk* won't lose your data even if your Mac loses power.

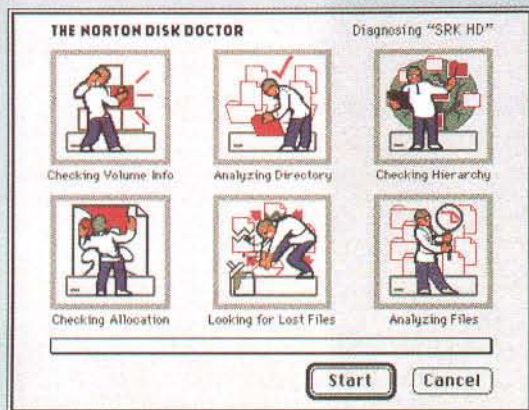
## What a find.

Of course, you don't have to lose your data to want to get at it as quickly as possible.

That's something you want to do every day, every time you open a file.

So you'll be interested to know that *Fast Find* locates and opens files so quickly, you may never use the Mac's standard Find File accessory again.

If all of this looks too good to be



*The remarkable Norton Disk Doctor automatically diagnoses, reports and repairs the 45 most common—and dangerous—disk problems. It even tells you when it's time to run our Speed Disk utility and optimize your Mac's performance.*

true, see your favorite software dealer for a demonstration.

If you haven't got a favorite software dealer, call us right away at **1-800-343-4714 Ext 703G.**

We'll send you more information.

**SYMANTEC.**



### UTILITIES

- ▶ Norton Disk Doctor
- ▶ UnErase
- ▶ Speed Disk
- ▶ Format Recover
- ▶ Norton Disk Editor
- ▶ Directory Assistance
- ▶ Layout Plus

### DESK ACCESSORIES

- ▶ Fast Find
- ▶ KeyFinder

### CONTROL PANEL DEVICES

- ▶ DiskLight™
- ▶ FileSaver
- ▶ Volume Saver

➤ We rebuild your reformatted hard disk in a mere nine seconds. That's 52 times faster\* than the "competition." ➤

\*Total times to recover a reformatted 40MB Quantum® internal hard drive on a Macintosh IIx with respective volume information files installed.

© 1990 Peter Norton Computing, Inc. 100 Wilshire Boulevard, Santa Monica, CA 90401-1146. All rights reserved. Macintosh and Mac are registered trademarks of Apple Computer, Inc.

Circle 141 on reader service card





# Life in the Anthropomorphic Lane

OF ANTS AND VIRUSES AND ROBOTS ON MARS

BY STEVEN LEVY

**A**t 14 inches long and a foot wide, Attila II is bigger than your typical insect. But like a common, self-respecting grasshopper or roach, Attila II has legs and knows how to use them.

Like an insect, he can walk, jump, and even recover, with a modicum of grace, from a fall on his back.

But unlike an insect, he has a metal chassis, 150 electronic sensors, and a self-contained computer communication network. The program that determines his behavior—the equivalent of the genetic rules that determine the behavior of an ant or bee—is written on a Macintosh and injected into Attila's chips. And one day Attila may go to Mars.

Attila II is a robot. To most of us that term connotes either the wise-cracking anthropomorphic creatures in sci-fi flicks, or the utilitarian precision arms you find in any sort of factory in Japan. But Attila's creators at MIT's Mobile Robotics Lab have something else in mind. Their methodology is to borrow liberally from nature in order to build robots that display independent behavior in the same way animals do. Using a so-called bottom-up approach in which complex, and potentially useful, behavior emerges from simple rules, they believe their creations offer not only a fresh alternative to conventional robotics but also a more useful one, in which robots will be able to go about their business without the need for constant supervision from

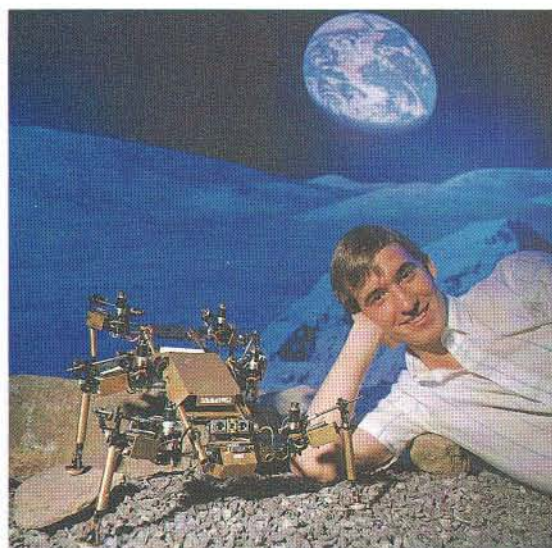
proselytizer, Christopher G. Langton at the Los Alamos National Laboratory, A-life refers to "the study of man-made systems that exhibit behaviors characteristic of natural living systems." This sounds rather benign until you seriously begin to consider the potential ramifications of these man-made systems.

Because many A-lifers believe that those systems will one day be truly alive. As alive as bacteria, ferns, grasshoppers, sea urchins, and Madonna.

"Within fifty to a hundred years a new class of organisms is likely to emerge," writes J. Doyne Farmer, also of the Los Alamos National Laboratory. "These organisms will be artificial in the sense that they will originally be designed by humans. However,

they will reproduce, and will evolve into something other than their initial form; they will be 'alive' under any reasonable definition of the word."

But we don't have to wait until late in the twenty-first century to get a taste of what artificial life might be like. As it turns out, there are a slew of working examples of A-life that provide a flavor of what our silicon-based off-



Colin Angle plans a life on Mars for his creation, Attila II.

human beings. And if that's not reason enough to build an artificial insect, Colin Angle, the wizard in his early twenties who crafted Attila's hardware, gives the ultimate rationale: "Because it's incredibly cool."

## Artificial Life

That it is. But the effort is also part of a revolutionary new field of science: artificial life. As defined by its chief

BILL O'CONNELL

(continues)



spring might be like. Some of them are based on the Macintosh. Some of them *live* in the Macintosh. So let me whisk you around on a guided tour.

#### Wonderful Toys

The first stop takes us to the world of cellular automata, a checkerboard-based mathematical universe that proceeds in discrete time-steps.

Whether a given square in the board is "born," continues "living," or "dies" depends upon which neighboring squares are occupied in the current time-step. Amazingly, simple rules yield complex behavior, fascinating patterns, and ultimately lifelike behavior, though not nearly lifelike enough to make you feel guilty when you shut off your Mac. I've discussed

these phenomena before (*The Iconoclast*, April 1990), but whereas I previously bemoaned the lack of a good Macintosh program for generating these simulations, now I can happily announce that an Apple engineer named Ken Karakotsios has produced CASim, a full-featured package that allows not only for browsing but also some serious experimentation.

Climbing up the great chain of artificial being, the idea that complex behavior can evolve from simple rules makes for some fascinating theory. One of the more charming manifestations of this is a bewitching book called *Vehicles: Experiments in Synthetic Psychology* (MIT Press, 1986) by Valentino Braitenberg. Braitenberg is the director of the Max Planck Institute of Biological Cybernetics, and while he calls his book "an exercise in fictional science," it conveys the very real phenomenon that what we consider lifelike behavior can come from a few ridiculously elementary initial conditions. He postulates imaginary vehicles—little toy cars wired with various motors and sensors. In Braitenberg's scenario, once you combine a smattering of these low-tech parts, suddenly the vehicles start acting like creatures, displaying aggression, cowardice—even affection.

The software program that accompanies the book lets you convert this thought-experiment into reality, or at least the sort of reality that exists on the screen of a Macintosh. Using the experiment called Love and Hate, you wire the vehicles to move differently according to which sort of "pit" you place on the computer playing field. Place your vehicles—which look like contestants in a vintage soapbox derby—on the field, and watch as they spin around the pits, or toward the pits, or away from the pits, in ways you might not have considered. Obviously, these are not living critters—but your anthropomorphic tendencies will be tickled nonetheless.

#### Agar and Ram

One fan of vehicles is Mike Travers, a graduate student at MIT's Media Lab. Using not only Braitenberg's ideas but also the experience of Alan Kay's Vivarium project and the "Society of Mind" (*continues*)

## MS-DOS® and Windows®, 2 PC/AT® Slots, VGA®, PC/Novell® EtherNet for Your Macintosh®

# Orange 386

MS-DOS® Coprocessor

If you need to run "corporate standard" or custom PC software on your Mac, or require superior connectivity to PC dominated networks, you want maximum performance and full AT hardware compatibility. Truly a universal platform, the Orange386 coprocessor board features:

Intel® 80386sx/16 processor  
for full MS-DOS or Windows compatibility

Revolutionary PC/AT bus slots  
for 2 add-in cards such as  
Novell EtherNet, VGA,  
or Token Ring

Optional 387 math coprocessor

Interface for IBM® PC  
compatible serial, parallel,  
and floppy drive

On-board  
memory expansion  
up to 16 megabytes

Call  
your  
dealer now  
to order your  
Orange386  
Coprocessor today!

Circle 31 on reader service card.



**Orange Micro**  
Inc.

"11 Years of Innovation and Excellence"  
1400 N. Lakeview Ave., Anaheim, CA 92807  
(714) 779-2772





## Never before has such a small laser printer offered so much speed and economy — and Adobe® PostScript®, too.

Introducing the 16 ppm microLaser™ XL printer. The perfect partner for your Macintosh® computer!

Now you can afford a 16 ppm laser printer at an 8 ppm price, and create all the graphics the Macintosh is famous for producing. The newest addition to Texas Instruments award-winning microLaser family offers you two affordable Adobe PostScript models, with either 17 or 35 fonts, starting at just \$4,144\* — hundreds less than comparable PostScript printers.

**Just the right match for one Mac or many.** Whether you use only one Macintosh computer or several, microLaser XL can handle the workload for you or an entire network. You can even switch between HP LaserJet® II emulation and PostScript without turning off the printer.

**Superior paper handling.** Save time loading paper — microLaser XL's paper drawer holds 250 sheets. You'll save space too, because the drawer slides conveniently inside the printer. An optional, second 500-sheet



paper feeder (750 sheets total) and automatic feeder for 70 envelopes are available for your large print jobs and mail-merge applications.

It's all easy to control, too. That's because PostScript software lets you choose the right paper tray with simple icons on your Mac screen. Just pick an option with a click of your mouse.

Plus, at only 15.8" wide and 16.6" deep,

microLaser XL is the smallest laser printer in its class. So it's a natural beside your Mac — or in a central location, conveniently tucked away.

**Powerful printing is a call away.**

See the power and performance of microLaser XL for yourself. Call for the location of a dealer near you.

### 1-800-527-3500

\*\$4,144, 17 fonts; \$4,644, 35 fonts — TI suggested list prices. Includes PostScript, 1.5MB memory and AppleTalk® interface board.

**TEXAS  
INSTRUMENTS**

microLaser is a trademark of Texas Instruments Incorporated. Adobe, PostScript and the PostScript logo are registered trademarks of Adobe Systems, Inc. Macintosh and AppleTalk are registered trademarks of Apple Computer, Inc. LaserJet is a registered trademark of Hewlett-Packard, Inc.  
© 1991 TI 66099

**Circle 313 on reader service card**



theories of artificial-intelligence guru Marvin Minsky (who is also Travers's thesis advisor), Travers has created Agar: An Animal Construction Kit. Travers hopes to build all sorts of animals with this; currently ants spring from the Mac II that runs the program.

Travers's work places him among those who believe that by creating animals that live inside the computer,

we can better understand the way real animals behave. So after spending a lot of time in his backyard watching ants, and reading the works of the great entomologists like E. O. Wilson, Travers began to implement artificial ants, using computer agents to direct their behavior. In keeping with the spirit of artificial-life experiments, he didn't assign an overall goal to the

ants—something like "find food and recruit other ants to help you get it back to the nest." That would be a top-down thing to do, frowned upon by A-lifers. Instead, he broke down this complex task into simple behavior and let the difficult part emerge. This is the preferred bottom-up methodology, reflecting how real life evolved.

So when you see Agar running, the on-screen ants may not be as focused as real ones—they seem to be more easily distracted, for one thing—but eventually they discover the virtual food planted somewhere on screen and leave a chemical trail as they head back to the nest. Then other ants come across the trail, and collectively the ants can gather all the food and return it. When the user tires of seeing the ants crawl around, he or she can select an alternative view that shows which software agent is active at a given time. (A software agent is a computer factotum that performs tasks independently. For instance, if an ant comes across food, the agent for moving the ant's pincer to pick up food will be activated.)

Is this the way real ants behave? Actually, ethologists (the zoologists who study animal behavior) are divided on this question. Indeed, Travers has had requests for his software from ethologists who think this type of computer project can shed light on the doings of real creatures.

If Agar has some potential utility, consider an artificial-life program that has already proven valuable in the real world. It is called Ram and is a product of biologists and computer scientists at UCLA. The idea is to model population behavior and evolution, operating from the premise that living organisms are similar to computer programs. "Just as organisms are born, live, learn, interact with each other, reproduce with modification, and die, so too can animal programs initiate, execute, learn, communicate, interact with environment programs, replicate with modification, and terminate," says one paper describing the system. This is not just for fun—since Ram allows one to accurately model organisms in certain environments, it has proven useful in predicting the behavior of certain

(continues)

**NEW!**  
**Version**  
**3**

# Virex®

*New Virex Version 3 is the most powerful virus prevention, detection and treatment available. If it were any stronger, you'd need a prescription.*



## The Virex INIT

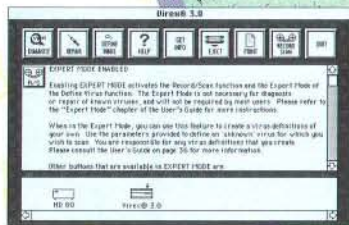
- full detection and treatment functionality
- user-configurable for new virus detection
- instant repair of infected files
- hot-key scanning of files folders and volumes.

## Virex Version 3

- 3 layers of protection against new viruses
- new user interface
- 30% enhancement in file scanning speed

*And Virex 3 is supported by the same great technical support and customer service that has made Virex a best-seller for more than 2 years.*

*So when you're worried about computer virus headaches, get the strongest anti-virus medicine available. Virex!*



**Microcom**

P.O. Box 51489  
Durham, NC 27717  
(919) 490-1277, ext. 215

Circle 41 on reader service card.

© 1991 Microcom Systems, Inc. Virex is a registered trademark of Microcom Systems, Inc. Macintosh is a trademark of Apple Computer, Inc.



# Now With Mirror's New Low Pricing, There's No Reason To Buy A No Name.



**45 MB Removable— \$497**

**45 MB External— \$327**

Some unfamiliar hard drives have popped up lately in the back pages of industry magazines. Most promise cut-rate prices, and quick delivery. Easy come, easy go.

Mirror believes a big part of what you buy in a Macintosh hard drive is a company that's going to be around longer than the warranty. One that's as dedicated to quality, service and support as it is to low prices.

And Mirror's been around almost as long as the Mac itself and doing better than ever. Last year was one of record sales and growth. Macintosh users have come to rely on us for quality products and superb service. Now you can purchase a Mirror drive for one additional reason...low price.

Now, thanks to higher volume and improvements in operating efficiency, Mirror is able to offer some of the most attractive drive prices found in any part of the book. We've done it without cutting corners and still back it with a complete 2-year warranty and a 30-day money back guarantee. So not only is owning a Mirror drive a safe buy, it's also now a very smart buy.

**MIRROR  
TECHNOLOGIES**

**1-800-654-5294**

Technical Support Hotline: (612) 633-2105  
Hours: Weekdays 8 a.m. - 6 p.m. CST  
Telephone: (612) 633-4450  
Fax: (612) 633-3136  
2644 Patton Road, Roseville, MN 55113

HARD DRIVES	20MB	45 MB	50 MB(Q)*	80 MB	105MB(Q)	210 MB(Q)	290MB	595MB	1.2GB	45MB Remov.	600MB Optical
EXTERNAL	\$297	\$327	\$417	\$467	\$527	\$947	\$1497	\$1997	\$2697	\$497**	\$2997**
INTERNAL	\$237	\$267	\$357	\$407	\$467	\$887					

\* (Q) denotes Quantum Drive. \*\*Price Includes One Cartridge

Circle 125 on reader service card



# FrameMaker could throw a book at

## chapter 15 THE DISAPPEARING RAIN FORESTS

Solve unique design problems with multiple text flows and multiple master pages for everything from title pages and chapter headings to indexes.

Create great looking documents with typographic controls that let you make your point in font sizes from 4 to 400 points. In increments of one thousandth of a point.

FrameMaker's "smart" spell checker not only proofreads for spelling errors but also detects repeated words, extra spaces, and repeated punctuation.

Import text and graphics from a wide range of popular software applications.

FrameMaker gives you WYSIWYG word processing, flexible paragraph and character formatting.

**M**ost tropical forests form a green band around the earth's center extending roughly 10 degrees north and south of the Equator. Amazing as it may seem, these forests occupy less than eight percent of the Earth's entire land mass, yet they account for nearly half of all the growing wood on the planet and are the home for two fifths of Earth's animal and plant species. It is because of the amazing diversity of species that the rain forests are so important to mankind for we rely on these for agriculture, medicine, and industry.

### 15.1 Natural Source of Products

At least a quarter of all pharmaceutical products are derived from tropical rain forests. An even more impressive statistic when you consider that less than one percent of all Amazon plants have been intensively examined for their medicinal properties.

Tropical rain forests have provided man with treatments for leukemia, Hodgkin's disease, breast, cervical, and testicular cancer as well as a wide array of analgesics, antibiotics, heart drugs, enzymes, hormones, diuretics, anti-parasitic compounds, ulcer treatments, dentifrices, laxatives, dysentery treatments and anticoagulants. Of the 90,000 plant species in Latin America, only 10,000 have been tested for anti-cancer properties. Scientists expect that at least ten percent of the untested plants will reveal some form of anti-cancer activity. A species of alexa tree, found in the northern Amazon basin and Madagascar contains the plant alkaloid castanospermine which is being studied at St. Mary's hospital in London as a possible treatment for forms of AIDS.

Vast quantities of rubber from the rain forests provide such mundane items as tires, gum, and running shoes.

### 15.2 Thousands of Diverse Species

The rain forests are the most complex and diverse ecosystems in the world. A one and a half hectare of rain for-

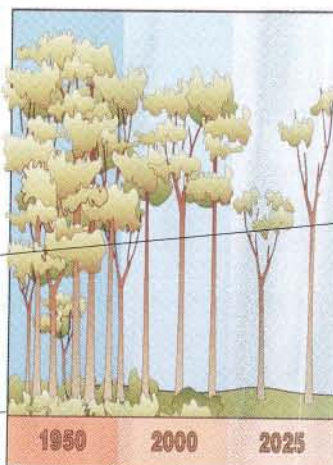


Figure 15.1 From 1950 to 1975, the amount of the earth's surface covered by tropical rain forest declined 15% to 12%. It is predicted to decline to 7% by the year 2000, and to 4% by the year 2025.

566

We mean a book. A whole book. From the table of contents to the index. And everything in between.

Introducing FrameMaker® 2.1.

This is real workstation publishing software. Available for the first time on the Apple Macintosh computer.

FrameMaker is the first software application that lets you simply and

elegantly create long, structured, multi-author documents on a Macintosh. Without switching back and forth between other word processing and page layout programs.

FrameMaker seamlessly integrates word processing, page layout, graphics, math equations and book building functions in one application. Which means, not only is it

powerful and robust enough to handle the publication of books and technical documents, it also lets everyone involved in producing documents, from engineers and writers to artists and editors, use the same software.

And because FrameMaker strictly adheres to the conventions of the Macintosh interface, it's both



# ially invites you to your Macintosh.

est can contain over two hundred different varieties of trees alone. One scientist discovered three thousand species of beetles within just five plots of twelve square meters each.<sup>1</sup> There is no other environment like it.

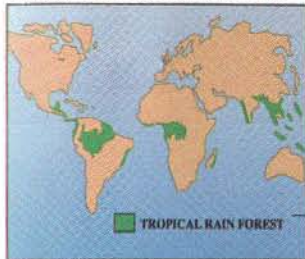


Figure 15.2 Amazing as it may seem, tropical rain forests occupy less than eight percent of the Earth's land mass, yet they are home to two fifths of its plant and animal species.

It is this remarkable diversity of plant and animal life that makes the rain forests such an important resource for the planet. More than the "greenhouse effect" or any other negative impact deforestation may have, it is the loss of these species that makes it imperative we preserve the remaining forests.<sup>2</sup>

Habitat destruction is now the most important cause of species loss. If present trends continue, we can expect an annual rate of loss as high as fifty thousand species by the year 2000. At this rate, we would be driving 130 species into extinction every day.

The worst thing that can happen during the 1980s is not energy depletion, economic collapse, limited nuclear

war, or conquest by a totalitarian government. As terrible as these catastrophes would be for us, they can be repaired within a few generations. The ongoing process that will take millions of years to correct is the loss of genetic and species diversity by the destruction of natural habitats. This is the folly our descendants are least likely to forgive us. See p.550 for a comprehensive review of genetic diversity in Aceh.

### 15.3 Forecast for the Climate

Tropical rain forests help to stabilize the world's climate by absorbing solar radiation. They literally soak up sunshine. When forests are cleared, the "shininess" of

$$S_x = 2 \int_a^b \sqrt{1 + \left(\frac{dy}{dx}\right)^2} dx = 2 \int_0^a \sqrt{1 + \frac{x^2/a^2 - x^2}{2a\sqrt{2}} \frac{3a^2 - 2x^2}{2a\sqrt{a^2 - x^2}}} dx$$

For many scientists, the problems presented by depleting ozone (as shown in this equation) and the hotly debated "greenhouse effect" are vastly overshadowed by the near certain extinction of countless species of plants and animals.

Earth's land surface increases, radiating more of the sun's energy back into space. This is known as the "albedo" effect. An increase in "albedo" could lead to disruptions of convection patterns, wind currents, and rainfall in lands far beyond the tropics. Read: one's own backyard. Although tropical rain forests do not significantly affect Earth's oxygen balance, their destruction does play an important role in the increase of carbon dioxide. When forests are cleared, they are typically burned, releasing considerable quantities of carbon into the skies. Carbon dioxide levels in the atmosphere have

Forecast for the Climate

567

Create sophisticated illustrations using FrameMaker's own palette of built-in graphics tools.

FrameMaker's cross-reference feature allows you to create links between related information within a document or across multiple documents.

Graphics can be easily anchored to text. Move your image and the caption follows right along.

Evaluate, simplify and edit equations using the FrameMath™ WYSIWYG tool palette.

Automatically add footnotes using FrameMaker's advanced word processing features.

easy to learn and easy to use.

Whether you're on a stand-alone Macintosh, or you are a part of a networked Macintosh workgroup, FrameMaker will provide a seamless publishing solution.

And if your network also includes UNIX workstations, FrameMaker will allow you to create, edit, and integrate documents by multiple

authors across multiple platforms. Including Apollo, DEC, HP, IBM, NeXT and Sun workstations, to name a few.\*

Call 1-800-U-4-FRAME, ext. 850 for the name of the FrameMaker dealer nearest you. For names of international dealers or distributors, please call 408-433-3311 or fax us at 408-433-1928.

And let us show you volumes of reasons why FrameMaker can tackle any book building assignment you throw at it.

 **Frame**™  
The workstation  
publishing company



# The Power of 3



## Mouse Systems

# A<sup>3</sup>

Mouse Systems A<sup>3</sup> Mouse.  
3 user definable mouse buttons.  
50% more resolution. Pinpoint  
accuracy. Natural feel. Three  
times the power!

- Cut, paste, print, return (etc.) with one click of the mouse
- Compatible with A/UX, Mac X, X-Windows, and Mac/OS (Systems 6.0 and 7.0)
- 100% Optical Technology. No moving parts!

*Bring the Power of 3  
to Your Desk Today!*



47505 Seabridge Drive  
Fremont, CA 94538  
(415) 656-1117

A/UX, Mac X, Mac/OS are trademarks of Apple Computer. A<sup>3</sup> Mouse is a trademark of Mouse Systems.

Circle 105 on reader service card.

animal populations. For instance, mosquitoes. Using Ram, the UCLA researchers, including biologist Charles Taylor, modeled the various factors of the mosquito population of Orange County, California. By projecting the behavior of the population, they were able to suggest more efficacious ways of pest control.

### Artificial Insect Lab

I can hear my readers' guffaws. You call these computational critters *alive*? Allow me to sidestep the problem by switching from computer programs to robotics. Surely no one would argue that robots, who live in the same messy world that we do, are not real.

But can robots be in any sense alive? Well, one roboticist argues that when trying to duplicate a particularly difficult aspect of living—intelligence—getting outside of the computer and into the body of a robot is essential. As Rodney Brooks explains it, a robot has to deal with the same challenges that early living organisms dealt with—mainly moving around and coping with an earthly environment. That's what made animals so smart; and that, he says, is what will make robots smart.

What Brooks says matters, because he is the head of MIT's Mobile Robot Lab, currently the main outpost of robotics based on the bottom-up principles of artificial life. The unofficial nickname for the group is The Artificial Insect Lab. Why insects? As Brooks once put it, "Insects are very robust devices. They operate in a dynamic world, carrying out a number of complex tasks including hunting, eating, mating, nest building, and rearing of young. . . . Insects succeed. No human-built systems are remotely as reliable. . . . Thus I see insect-level behavior as a noble goal."

Though not all the robots from Brooks's lab look like insects—some are wheeled things with an R2D2 flavor—one of the big ideas floating around the lab is that small, autonomous, insectlike robots with behavior based on a hierarchy of simple rules can yield big results. Their motto is Fast, Cheap, and Out of Control, and Brooks's minions see their tiny robots—some are as little as 1 inch square and are dubbed "gnat ro-

bots"—as silicon Davids tackling the pickup-truck-size products of rival labs.

A case in point is Attila II, the creature described earlier. Brooks's idea is to send a shipload of Attilas to Mars and let them loose to perform certain useful tasks, such as exploration or gathering samples. Once on the planet, Attilas are expected to form a society, utilizing a swarm intelligence like that found in social insects. They can communicate with one another by sonar; if one finds a promising pile of minerals it could call its siblings to help mine it. Unfortunately, NASA has so far resisted the lure of Fast, Cheap, and Out of Control, instead funding two projects to send single, giant-size multimillion-dollar robots to Mars.

Undaunted, the MIT people are now offering their wares to other researchers, through a California company. The deluxe roboticist will want to look into buying an Attila II. Though it will cost as much as \$50,000, it is a state-of-the-art artificial insect, moving on six legs, jumping, recovering from falls, and capable—depending on what programs it holds in its on-board computers—of complex emergent behaviors, including learning.

Even with those behaviors, no one would call Attila II a living creature. But the robot represents a step toward an ecosystem in which artificial creatures truly coexist with real ones. If this sounds farfetched, consider this: in one sense, it's already happened. Ask A-lifers what currently comes closest to a "real" artificial life-form, and they usually reply, "computer viruses." Indeed, those pernicious constructs operate in precisely the same way as their biological counterparts. No one can say exactly why a computer virus is no less "alive" than a real virus. Certainly, once let loose in the computational ecosphere, viruses seem to have a life of their own, though not necessarily a salutary life. But who said that artificial life-forms will wind up serving their creators? **M**

See *Where to Buy* for contact information.

*Steven Levy, a Macworld columnist, is currently writing a book on artificial life.*



# The face behind the name.

**"I designed Managing Your Money® to do everything I need. The idea is to make Managing Your Money your financial control center — to have everything you're ever likely to need in one place, working as one."**

**Andrew Tobias, Financial Expert**

**Introducing:**

## **NEW Andrew Tobias' Managing Your Money® Version 4.0! The ONLY financial software that does it all.**

- Budgeting
- Checkwriting
- Electronic bill payment with CheckFree® system
- Tax planning
- Teams up with MACIN Tax™ for tax preparation
- Insurance
- Portfolio management
- Net worth calculator
- Retirement planning
- College planning
- Loan amortization
- Full business features
- Exports to Microsoft® Excel, Works, and most spreadsheets



### **Why not explore Managing Your Money for yourself?**

For a FREE interactive demo disk\* call 1-800-237-8400 ext. 217.

You won't be disappointed.

\*Offer good while supplies last. MACW 2/911

**mecca** © 1990 MECA Software, Inc.

Circle 37 on reader service card



Midnight to 3:15 AM EST  
Same-Day Delivery.

# Do you like things

The original mail order source for Macintosh products. Since 1984.

## MONEY BACK GUARANTEE

The majority of products we carry are offered under a 30 or 60 day Money Back Guarantee. The companies participating in this program are highlighted in red. If you are not satisfied with your purchase of any of these products, call us for an authorization and return it *with all of the original packaging* within the guarantee period for a refund check (or credit on your credit card). We reserve the right to limit quantities on such returns.

## LATEST VERSIONS

We only carry the very latest versions of products so, rest assured, that's what you'll receive when you order. The version numbers shown here are based on the best available information at press time. If a newer version has come out in the meantime, or if there's been a price change, we'll let you know before taking your order. Also, all software is not copy-protected, unless indicated otherwise by (CP).

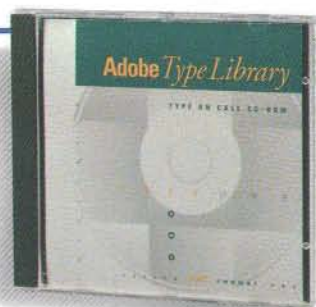


### A Lasting Impression

5465 *ResumExpert*—Professional résumé composition. 40+ fully-formatted MS Word résumé templates. Highlight the text & substitute your own information. Rated 4 Mice by *MacUser*. See line listing for other editions. . . . \$48.

## DAILY BUSINESS

<b>★Aatrix Software ... 30 day MBG</b>		
5872	Checkwriter II 3.2	32.
3976	Payroll 3.5	99.
8053	Aatrix Ultimate Payroll 4.2	199.
<b>Abacus Concepts</b>		
8937	MacSpin 3.01	169.
4482	StatView SE + Graphics 1.03	199.
4481	StatView II 1.03	279.
	SuperANOVA 1.1 (for Plus/SE or II) ea.	309.
5907	Statview II/SuperANOVA Bundle	569.
<b>★Acius ... 30 day MBG</b>		
	4D Write 1.0.1 or 4D Calc.	ea. 229.
4024	4th Dimension Runtime (4 user)	249.
5618	4th Dimension 2.1.1	489.
7838	4D Compiler 1.0	895.
6948	File Force 1.0.1	249.



### Adobe Systems

8794 *Adobe Type On Call CD/ATM*—Fastest, most economical way to buy Adobe Type. Includes the CD-ROM disc, ATM, & two free typeface families out of a selection of eight. Call us anytime to unlock additional typeface families \$47.

9443 *Adobe Type On Call CD/ATM & Porta Drive CD-ROM Bundle* . . . . . 659.



### CD Technology

8057 *Porta Drive CD-ROM*—A compact & lightweight CD-ROM drive with 683 Mb capacity & Mac Interface Kit. Porta Drive CD-ROM also includes phone jacks and PlayCD HyperCard utility *MacUser*: 4½ Mice. . . \$649.

### ★Advanced Software ... 30 day MBG

5608	DocuComp 1.5	89.
<b>A Lasting Impression</b>		
	ResumExpert or Cover Letters	ea. 48.
	Sales & Marketing, Management Edition, Computer Science & Engineering	ea. 48.

### ★ASD Software ... 30 day MBG

7619	Planisoft (1 user)	195.
7620	(5 user)	579.
7621	(10 user)	839.

### Ashton-Tate

8961	Full Impact 2.0	159.
------	-----------------	------

### ★Avery ... 60 day MBG

7446	MacLabel Pro 1.0	48.
------	------------------	-----

### ★Baseline Publishing ... 30 day MBG

4781	Vantage 1.5.1	51.
8882	1 Shot Worksheet 1.0	57.
8881	Thunder 7 1.0	57.

### ★Chang Labs ... 30 day MBG

1611	C.A.T. 3.0	special 249.
------	------------	--------------

### ★Checkfree Corp. ... 30 day MBG

6928	Checkfree Mac 1.5	19.
------	-------------------	-----

### ★CheckMark Software ... 60 day MBG

5861	CashLedger 1.3A	115.
5862	Payroll 4.5	175.
5863	MultiLedger 1.3	235.

### ★Chipsoft ... 30 day MBG

8059	TurboTax Personal/1040 1.0	50.
<b>Claris</b>		
1129	MacWrite II 1.1V1	139.
8216	FileMaker Pro 1.0V1	215.
1125	MacProject II 2.1V3	359.

### ★Deneba Software ... 30 day MBG

4700	BigThesaurus 1.0	64.
1768	Coach Professional 3.1	124.

### ★DeltaPoint ... 60 day MBG

8967	Taste 1.0	84.
------	-----------	-----

### ★Fox Software ... 30 day MBG

5572	FoxBASE+/Mac 2.01	289.
4844	FoxBASE+/Mac Multi-user	409.

### ★Franklin Software ... 30 day MBG

7070	Language Master 2.0	45.
------	---------------------	-----

### Informix

4955	Wingz 1.1A	245.
------	------------	------

### ★Intuit ... 30 day MBG

2425	Quicken 1.5	38.
------	-------------	-----

### ★Kaetron Software ... 30 day MBG

8941	TopDown 2.1	219.
------	-------------	------

### ★Lifetree Software ... 30 day MBG

6984	Correct Grammar 2.0	55.
------	---------------------	-----

### ★Mainstay ... 30 day MBG

7718	MacFlow 3.5	169.
7715	MacSchedule 2.5	139.
8613	MacSchedule Plus 1.0	199.

### ★MECA ... 60 day MBG

2796	Managing Your Money 4.0	99.
------	-------------------------	-----

### ★Microlytics ... 60 day MBG

7506	Inside Information 1.0	68.
7820	Random House Encyclopedia	68.

### ★Microsoft ... 30 day MBG

2884	Works 2.00C	184.
4969	Word 4.0B	245.
2865	Excel 2.2A	245.
5454	The Microsoft Office	525.

### Microsoft Press

6703	Inside SuperCard Book	15.
7680	Word on Apple Mac Book	15.
4057	Works on Apple Mac Book	15.
2864	Excel In Business Book	18.
6500	Excel Money Mgr. Book (incl. disk)	25.

### ★Niles & Associates ... 30 day MBG

5048	EndLink 1.1.3	58.
4602	EndNote 1.3	85.
8010	EndNote Plus 1.0	145.



### Microsoft ... 30 day MBG

2865 *Excel 2.2A*—A powerful spreadsheet with analytical strength & graphic output. Integrate worksheets into Word, PowerPoint, & PageMaker for flexibility when creating presentations. Upgrade to 3.0 from Microsoft for \$50 + S&H. . . \$245.



# incredibly fast?



## Shana ... 30 day MBG

7692 *Informed Designer v. 1.0.4*—If forms are part of your life, Informed should be too. Design with Informed Designer, then fill out and use the unique capabilities of Informed Manager **\$159**.  
8810 *Informed Manager 1.0* ..... 99.

## ★Nolo Press ... 30 day MBG

4228 *For the Record 2.0* ..... 30.  
2981 *WillMaker 4.0 (not valid in LA.)* ..... 35.

## ★Odesta ... 30 day MBG

5621 *Double Helix III 3.0R6* ..... 389.  
6468 *DataDesk 3.0* ..... 459.

## Paragon Concepts

5683 *Nisus 3.04* ..... 245.

## ★Portfolio Systems ... 30 day MBG

7992 *DynoPage 1.0* ..... 72.  
6916 *Dynodex 2.0* ..... 72.

## ★PowerUp ... 30 day MBG

7696 *Calendar Creator 1.0* ..... 35.  
7697 *Letter Writer Plus* ..... 52.  
7694 *Address Book Plus 2.0* ..... 57.  
7698 *Fast Forms 2.0* ..... 105.

## ★Que Corp./RightSoft ... 30 day MBG

7482 *RightWriter for the Mac 3.10* ..... 54.



## Survivor Software ... 30 day MBG

3289 *MacMoney 3.5*—Award-winning basic accounting for personal or small business use. Track more than just one checkbook—assets and liabilities too. Easy to use with great support. .... **\$59**.

## Reality Technologies

6929 *WealthBuilder 1.0* ..... \$145.

## ★Reference Software ... 30 day MBG

6268 *Grammatik Mac 2.0* ..... 50.

## Satori Software

3320 *BulkMailer 3.25* ..... 75.

## ★Sensible Software ... 30 day MBG

3375 *Sensible Grammar 1.6* ..... 51.

## ★Shana ... 30 day MBG

8201 *Informed AutoForm 1.0* ..... 75.

8810 *Informed Manager 1.0* ..... 99.

7692 *Informed Designer v. 1.0.4* ..... 159.

## ★Softstream Int'l. ... 30 day MBG

8175 *HyperTax Tutor 1.0* ..... 59.

## Softsync/BLOC

7129 *Accountant, Inc. 2.0* ..... 339.

## Softview

3470 *MacInTax Personal Edition 1990* ..... 59.

8611 *if:X Business Expense Reports 1.0* ..... 48.

8612 *if:X Personal Tax Analyst 1.0* ..... 48.

7499 *if:X Forms Designer 1.0* ..... 169.

## ★Software Discoveries ... 30 day MBG

8118 *RecordHolder Plus 3.1* ..... 85.

## ★Survivor Software ... 30 day MBG

3289 *MacMoney 3.5* ..... 59.

## ★Symantec ... 30 day MBG

3422 *More 3.0* ..... 265.

## ★Symmetry ... 30 day MBG

6069 *KeyPlan 1.0* ..... 239.

## ★Synergy ... 30 day MBG

6617 *KaleidaGraph 2.1* ..... 145.

## ★SYSTAT, Inc. ... 30 day MBG

7410 *SYSTAT 5.1* ..... 599.

## ★Teleware ... 30 day MBG

7616 *M.Y.O.B. 2.05* ..... 142.

## ★TIMESLIPS ... 30 day MBG

8939 *Timeslips III Accounting Link 1.0* ..... 52.

2986 *Timeslips III 2.0E* ..... 195.

## ★T/Maker ... 30 day MBG

3639 *WriteNow 2.2A/Grammatik Mac* ..... 117.

7360 *WriteNow 2.2 (3-Pak)* ..... 245.

8206 *SmartBundle (WriteNow, Full Impact 1.1, SuperPaint 2.0 & RecordHolder Plus)* 215.

## ★Williams & Macias ... 30 day MBG

3781 *LaserWriter Label Pack (Qty. 216)* ..... 18.

6926 *myDiskLabeler III 3.0* ..... 42.

4976 *StickyBusiness 1.4* ..... 51.

## ★WordPerfect ... 60 day MBG

3800 *WordPerfect Mac 2.0* ..... 279.

## GRAPHICS & DESIGN

## ★Abbott Systems ... 30 day MBG

8052 *Cheshire 1.0* ..... 62.

## Adobe Systems

*Adobe Type Library (Vol. 1-205)* ..... call

6957 *Adobe Type Reunion 1.0* ..... 38.

5750 *Adobe Type Manager 2.0* ..... 55.

8794 *Adobe Type On Call CD/ATM* ..... 47.

6053 *Adobe Plus Pack* ..... 109.

6156 *Adobe Plus Pack/ATM* ..... 159.

6098 *TypeAlign for ATM 1.0.4* ..... 59.

6985 *Adobe ATM/TypeAlign Pack* ..... 89.

6671 *Adobe Type Set 1* ..... 55.



## Aldus/Silicon Beach ... 30 day MBG

1330 *Aldus FreeHand 3.0*—Delivers unprecedented control over the entire design & illustration process. Features on-screen palettes, flicker free drawing, rapid screen redraw, WYSIWYG, view or print 32-bit TIFF images & easier to use **\$399**.

6677 *Adobe Type Set 2* ..... 55.

7587 *Adobe Type Set 3* ..... 116.

8042 *Adobe Type Sets 1-2-3 Bundle* ..... 199.

8171 *Adobe Illustrator 3.0 (w/ATM)* ..... 349.

6644 *Adobe Photoshop 1.07* ..... 499.

5001 *StreamLine 2.0* ..... 119.

*Smart Art I, II, III, or IV* ..... ea. 59.

## ★Aldus/Silicon Beach ... 30 day MBG

6674 *Personal Press 1.0* ..... 199.

3506 *SuperPaint 2.0A* ..... 135.

8811 *SuperPaint/Personal Press Bundle* 279.

3980 *Digital Darkroom 2.0* ..... 259.

3507 *Super3D 2.1* ..... 339.

4751 *Aldus Persuasion 2.0* ..... 329.

7467 *Aldus PrePrint 1.0* ..... 329.

1330 *Aldus FreeHand 3.0* ..... 399.

7088 *Aldus PageMaker 4.0* ..... 499.

8054 *Aldus Design Team* ..... 869.



## Microsoft ... 30 day MBG

9444 *Microsoft Mail 3.0 (1-5 user)*—Electronic mail system with new features such as client caching, push notification, multiple file attachments, personal address books, and increased overall speed and power. Requires Mail Server. . **\$269**.

280C

MEMBER  
**MMC**  
of the Direct Marketing Association, Inc.

# MacConnection®

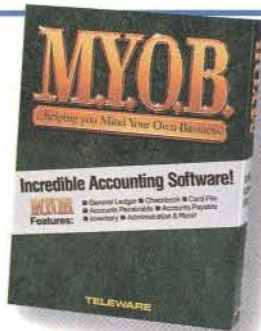
14 Mill Street, Marlow, NH 03456 603/446-7711 FAX 603/446-7791

1-800/334-4444



We'll Ship Your  
Order for \$3.

# Then our shipping



**Teleware ... 30 day MBG**  
7616 M.Y.O.B. 2.05—Incredible accounting software. "Best business deal on the Mac"—MacUser Eddy Awards. A/R, A/P, G/L, Checkbook, Inventory, and Card File. Easy to set up and use, full integration, custom forms. . \$142.

## Altsys

5425	Art Importer 2.0	85.
6499	Metamorphosis 1.5	85.
1195	Fontographer 3.2	259.

## ★Ares Software ... 30 day MBG

8878	FontMonger 1.0	63.
------	----------------	-----

## ★Baseline Publishing ... 30 day MBG

8055	Screenshot 1.2	31.
8872	MasterPaint 1.0	51.
7784	Color MacCheese 1.05	57.
7828	Exposure Pro 1.1	69.

## Bright Star Technology

6093	interFACE 1.0	249.
------	---------------	------

## Broderbund Software

9351	Kid Pix 1.0	29.
1427	The Print Shop 1.3.2	35.
6281	TypeStyler 1.5.2	115.

## ★Casady & Greene ... 60 day MBG

8879	Fluent Font Library 4.0	99.
------	-------------------------	-----

## Claris

1123	MacPaint II 2.0	90.
1117	MacDraw II 1.1V2	285.
8007	Claris CAD 2.0	645.

## ★Creative Software ... 30 day MBG

6645	Easy Color Paint 2.0	45.
------	----------------------	-----



**SuperMac Tech. ... 60 day MBG**  
5625 PixelPaint Professional 2.0—Multiple/larger documents, 8-bit masking, image merging, color correction, pressure sensitive brushes, PixelPaper, and more. . \$459.  
3380 PixelPaint 2.1. . . . . 149.

## ★Custom Applications ... 30 day MBG

8037	Freedom of Press Light 3.0 (17 fonts)	\$55.
6517	Freedom of Press 3.0 (35 fonts)	255.

## ★DeltaPoint ... 60 day MBG

6095	DeltaGraph 1.5	109.
------	----------------	------

## ★Deneba Software ... 30 day MBG

6365	UltraPaint 1.01	125.
1769	Canvas 2.1.1	189.

## ★Dream Maker ... 30 day MBG

	Cliptures: Business or Sports	ea. 68.
--	-------------------------------	---------

## Electronic Arts

4315	Studio/8 2.0	189.
8056	Studio/32 1.0	449.

## ★Farallon Computing ... 30 day MBG

6770	MacRecorder Voice Digitizer	89.
2199	MacRecorder Sound System 2.02	159.

## ★Foundation Publishing ... 60 day MBG

	Comic People or Kid Stuff	ea. 21.
6728	Comic Strip Factory 1.6	37.
9438	Comic Strip/People & Kid Bundle	71.

## Innovative Data Design

2417	MacDraft 2.1	279.
4707	Dreams 1.1	419.



## Multi-Ad Services

8767 Multi-Ad Creator 2.5—It's all here: Power, speed, precision, color separations. The high-end choice for producing complex pages—fast. MacUser says "If you create ads, get it." . \$499.

## Letraset

2619	ImageStudio 1.7	139.
2621	Ready Set Go! 4.5A	165.
6300	FontStudio 1.0	359.
6302	DesignStudio 1.0	489.
6301	ColorStudio 1.1	599.

## ★Linguist's Software ... 60 day MBG

	Over 100 language fonts	call
--	-------------------------	------

## ★Loop Software ... 30 day MBG

8726	OverView 1.0	89.
------	--------------	-----

## ★MacroMind ... 30 day MBG

9353	MediaMaker 1.0	489.
5087	MacroMind Director 2.0	629.

## ★Mainstay ... 30 day MBG

7714	Capture 3.0	42.
------	-------------	-----

## ★MediaLab Tech. ... 30 day MBG

8218	Picture Link 1.1	225.
------	------------------	------

## ★MicroFrontier ... 30 day MBG

7886	ENHANCE 1.2	235.
------	-------------	------

## ★MicroMaps ... 30 day MBG

7554	MapArt (Paint)	41.
7556	MapArt (PICT)	99.
7555	MapArt (EPS)	99.

## ★Microsoft ... 30 day MBG

2878	PowerPoint 2.01	245.
------	-----------------	------



## Paracomp ... 30 day MBG

8957 Swivel Pro/MacRenderMan Bundle—Combines one of the best selling 24-bit 3D programs with the industry's most advanced rendering software to create photographic quality images. . \$899.  
7441 Swivel 3D Professional 1.0. . . . . 435.

## Multi-Ad Services

8767	Multi-Ad Creator 2.5	499.
------	----------------------	------

## PANTONE

7466	Process Color Imaging Guide	49.
------	-----------------------------	-----

## ★Paracomp ... 30 day MBG

7728	SwivelArt 1.0	82.
7441	Swivel 3D Professional 1.0	435.
8957	Swivel Pro/MacRenderMan Bundle	899.
7839	FilmMaker 1.0	435.

## Pixar

8965	Pixar Showplace 1.0	469.
8966	MacRenderMan	549.

## Quark

4621	QuarkStyle 1.01	199.
7612	QuarkXPress 3.0	519.

## ★Solutions, Inc. ... 60 day MBG

3446	The Curator 1.05	87.
------	------------------	-----

## ★Springboard ... 30 day MBG

3530	Certificate Maker 2.02	22.
------	------------------------	-----

## Strata

7773	Stratavision 3D 1.5.5	349.
7772	Stratavision 3D SRX/Renderman	999.

## Strategic Mapping

6518	ATLAS+MapMaker 4.5	369.
------	--------------------	------

## ★SuperMac Tech. ... 60 day MBG

3380	PixelPaint 2.1	149.
5625	PixelPaint Professional 2.0	459.

## ★Symmetry ... 30 day MBG

8172	Mariah 1.0	93.
------	------------	-----

## ★Tactic Software ... 30 day MBG

8251	Icon It! 2.1	44.
	Magic Typist, Art Fonts, or Sound Clips Vols. 1-4	ea. 49.

8263	Art Clips 1	49.
8261	Art Clips 2	64.

8248	Font Share 2.2	129.
------	----------------	------

## 3G Graphics

3942	Images with Impact: Graphics 1	50.
4583	Images with Impact: Business 1	65.

6379	Accents & Borders I	65.
------	---------------------	-----

## ★Timeworks ... 30 day MBG

7115	Publish It! Easy 2.0	145.
------	----------------------	------

## Ventura Software

8962	Ventura Publisher 3.0	499.
------	-----------------------	------

## ★Wildflower ... 30 day MBG

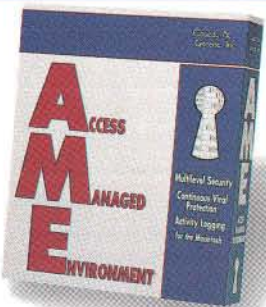
6512	SnapJot 3.0	31.
------	-------------	-----

## ★Zedcor ... 60 day MBG

3986	DeskPaint & DeskDraw 3.03	113.
------	---------------------------	------



# may leave you aghast.



## Casady & Greene ... 60 day MBG

7443 A.M.E. 1.1.2—A complete security, virus, & auditing program for the Mac. Control access to disk, DA's, printers, & files. Prevents illegal copying & running of unauthorized programs... \$159.  
7444 (5 user)... 509. 7831 (10 user)... 849.

## PROGRAMMING & UTILITIES

### ★ Abbott Systems ... 30 day MBG

5236 CanOpener 1.1 ..... 62.

### ★ Advanced Software ... 30 day MBG

8051 In touch 1.0 ..... 40.

### ★ Affinity Microsystems ... 60 day MBG

7835 Tempo II Plus ..... 105.

### ★ Aladdin Systems ... 30 day MBG

6169 Shortcut 1.0.1 ..... 45.

6740 Stuffit Deluxe 2.0 ..... 62.

### ★ Aldus/Silicon Beach ... 30 day MBG

5100 SuperCard 1.5 ..... 199.

### ★ ASD Software ... 30 day MBG

9440 MaccessCard Reader (req. FileGuard) 299.

9439 MaccessCard/FileGuard (1) Bundle 399.

7085 FileGuard Extended 2.5.2 (1 user). 139.

7422 (5 user)... 349. 7423 (10 user)... 579.

### ★ Baseline Publishing ... 30 day MBG

7783 INIT Manager ..... 35.

6656 Personality 1.0.1 ..... 49.

### ★ Berkeley Systems ... 30 day MBG

5737 After Dark 2.0T ..... 22.

1541 Stepping Out II 2.02 ..... 49.

### ★ Casady & Greene ... 60 day MBG

2269 QuickDEX 1.4D ..... 34.

7443 A.M.E. 1.1.2 (single) ..... 159.

7444 A.M.E. (5 user) 509. 7831 (10 user) 849.

### ★ CE Software ... 60 day MBG

4689 MockPackage Plus Utilities 4.4 ..... 31.

1727 CalendarMaker 3.01 ..... 31.

6278 DiskTop 4.0 ..... 63.

7518 Alarming Events 1.01 ..... 84.

8024 QuickKeys<sup>2</sup> 2.0.1 ..... 94.

### ★ Central Point ... 30 day MBG

5040 Copy II Mac 7.2 ..... 25.

5041 Mac Tools Deluxe 1.0 ..... 79.

### ★ Connectix ... 30 day MBG

7830 Maxima 1.0.9 ..... 45.

6123 Virtual 2.0.4 (for SE/30, IIcx, IIx, & IIci) 115.

6647 HandOff II 1.1.3 ..... 57.

### ★ Dantz Development ... 30 day MBG

5255 Retrospect 1.2 ..... \$147.

7945 Retrospect Remote 1.2 ..... 264.

7946 Remote (10 Pack of inits) ..... 147.

### ★ Design Science ... 30 day MBG

7887 MathType 2.0 ..... 88.

### ★ Digitalk ... 60 day MBG

5166 SmallTalk/V Mac 1.1 ..... 124.

### Dubl-Click Software

7974 ClickChange 1.04 ..... 40.

1824 Calculator Construction Set 2.09.6 ..... 45.

### ★ Fifth Generation ... 30 day MBG

4287 PYRO! 4.0 ..... 25.

3955 Suitecase II 1.2.8 ..... 49.

FastBack II 2.5 or DiskLock 2.0 ..... 118.

8284 SuperSpool 5.0 ..... 62.

8286 SuperLaserSpool 2.02 ..... 93.

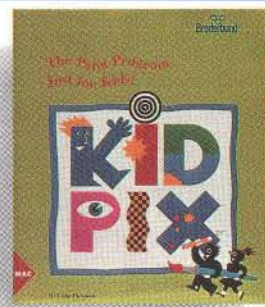
### ICOM Simulations

4084 On Cue 1.3 ..... 35.

4085 TMON 2.8.4 ..... 86.

### ★ Insight Development ... 30 day MBG

6171 MacPrint 1.23 ..... 94.



## Broderbund Software

9351 Kid Pix 1.0—Amazing paint program for kids. Combines special effect art tools, picture stamps, sounds & magic screen transformations to turn the computer into a magical art studio. Every brush & tool has its own sound effect \$29.

### ★ Microseeds Pub. ... 60 day MBG

7068 INITPicker 2.0 ..... 35.

4210 Screen Gems 1.0 ..... 39.

2913 Redux 1.63 ..... 49.

7116 Rival 1.1.4 ..... 49.

### ★ Microsoft ... 30 day MBG

4471 QuickBasic 1.0 ..... 64.

### Multi-Ad Services

8850 Multi-Ad Search 1.0 ..... 125.

### ★ Now Software ... 30 day MBG

6925 Now Utilities 2.0 ..... 75.

6739 Prototyper 3.0 ..... 184.

### Olduvai

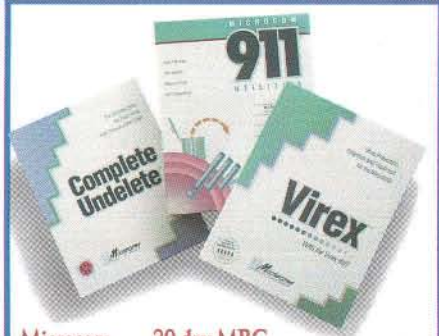
4503 MultiClip 2.0 ..... special 69.

### ★ ON Technology ... 1 year MBG

6385 On Location 1.02 ..... 75.

### ★ Palomar Software ... 30 day MBG

8210 PLOTTERgeist 1.1 ..... 199.



## Microcom ... 30 day MBG

4803 Virex 3.1—Comprehensive solution to the threat of computer viruses ..... \$57.

8561 911 Utilities—Troubleshooting file/disk recovery, complete undelete, isolate bad sectors, & Virex. 89.

8562 Complete Undelete—Recovers deleted files. 48.

### ★ JAM Software ... 30 day MBG

6089 Smart Alarms 3.0 w/Appt. Diary 3.1 63.

6088 Smart Alarms 3.0 (1-4 users) ..... 125.

### ★ Kent Marsh Ltd. ... 30 day MBG

5457 QuickLock 2.0 ..... 34.

2591 The NightWatch 1.03 ..... 85.

6134 MacSafe II ..... 107.

### ★ Kiwi Software ... 60 day MBG

6267 KiwiEnvelopes! 3.1 ..... 33.

7445 KiwiFinder Extender 1.02 ..... 64.

### ★ Loop Software ... 30 day MBG

5442 PictureBook 3.2 ..... 39.

### ★ Magic Software ... 30 day MBG

7267 AutoSave II 2.0 ..... 27.

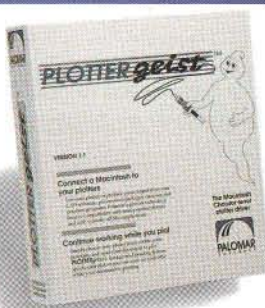
7270 Backmatic 2.0 ..... 50.

### ★ Microcom ... 30 day MBG

8562 Complete Undelete ..... 48.

4803 Virex 3.1 ..... 57.

8561 911 Utilities ..... 89.



## Palomar Software ... 30 day MBG

8210 PLOTTERgeist 1.1—Chooser-level driver connects plotters to your Mac. Provides background plotting to free up your computer; presentation-quality text capability; works with virtually all applications ..... \$199.

280C

MEMBER  
**MMC**  
of the International Franchise Association

# MacConnection®

14 Mill Street, Marlow, NH 03456 603/446-7711 FAX 603/446-7791



# Every order in sight

<b>★Salient Software ... 30 day MBG</b>		
7404	DiskDoubler 3.1	\$44.
<b>★Solutions, Inc. ... 60 day MBG</b>		
3448	SmartScrap & The Clipper 2.1	56.
3449	SuperGlue II 2.01	75.
<b>★SuperMac Tech. ... 60 day MBG</b>		
3377	DiskFit 2.0	58.
<b>★Symantec ... 30 day MBG</b>		
5176	Symantec AntiVirus for Mac (SAM)	65.
5724	Symantec Utilities for Mac (SUM II)	96.
6748	Norton Utilities for the Mac 1.0	84.
	THINK Pascal or THINK C	ea. 165.
<b>★Synex ... 30 day MBG</b>		
6665	MacPhonebook	32.
7147	MacEnvelope 5.02	57.
6666	MacEnvelope+	185.
<b>★Systems Compatibility ... 30 day MBG</b>		
7872	Software Bridge 1.0	79.
<b>★Tactic Software ... 30 day MBG</b>		
8964	MasterFinder 1.0	49.
<b>★Teletypesetting ... 30 day MBG</b>		
8601	TScript Basic	54.
8058	TScript 1.3	91.

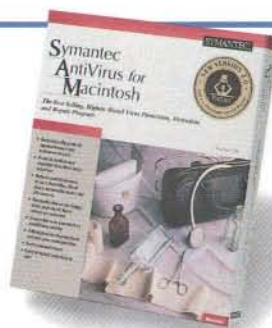


**Custom Applications ... 30 day MBG**  
8037 *Freedom of Press Light 3.0*—Print PostScript text & graphics files on non-PostScript printers. This award-winning software includes 17 outline fonts & supports ATM & Type 1 fonts... \$55.  
6517 *Freedom of Press 3.0 (35 fonts)*... 255.

<b>★TGS Systems ... 60 day MBG</b>		
6667	Prograph 2.0 Compiler Version	245.
<b>★Voyager ... 30 day MBG</b>		
9322	Voyager Videostack	69.
<b>Wolfram Research</b>		
8273	Mathematica Enhanced 1.2	699.
<b>★Zedcor ... 60 day MBG</b>		
3985	ZBasic 5.0	99.

## CD-ROM

<b>Adobe Systems</b>		
8794	Adobe Type On Call CD/ATM	47.
9443	Adobe Type On Call CD/ATM & Porta Drive CD-ROM Bundle	659.
<b>CD Technology</b>		
8057	Porta Drive CD-ROM	649.
7686	Porta Drive & MS Office CD-ROM	999.
<b>Chinon</b>		
8813	CDA-431 CD-ROM Drive	639.
<b>★Highlighted Data ... 30 day MBG</b>		
7771	Webster's Dictionary (CD-ROM)	159.
<b>★HyperGlot ... 30 day MBG</b>		
7473	Learn to Speak French (CD-ROM)	69.
7829	Learn to Speak Spanish (CD-ROM)	69.

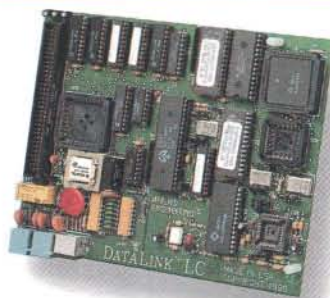


**Symantec ... 30 day MBG**  
5176 *Symantec AntiVirus for Mac (SAM)*—Best-selling, highest rated virus Protection, Detection, & Repair program for the Mac is now even better. New SAM version has enhanced update & repair capabilities, faster scanning & more! \$65.

<b>★Microsoft ... 30 day MBG</b>		
6382	The Microsoft Office (CD-ROM)	599.
<b>Multi-Ad Services</b>		
	ProArt Trilogy (CD-ROM series)	ea. 259.
<b>NEC</b>		
	Image Gallery, Type Gallery PS, Photo Gallery or Clip-Art 3D	ea. 246.
9441	CDR36 CD-ROM Portable Drive	349.
6743	Mac Driver Kit	64.
<b>Passport Designs</b>		
8255	Desktop Music Creativity (CD-ROM)	189.
8607	Music Production Kit (CD-ROM)	1249.
<b>Toshiba</b>		
6749	XM 3201 CD-ROM Drive	699.
<b>★Voyager ... 30 day MBG</b>		
9328	Voyager CD Audiostack	69.
9326	Beethoven Symphony No. 9 (CD-ROM)	69.
9327	Igor Stravinsky (CD-ROM)	69.

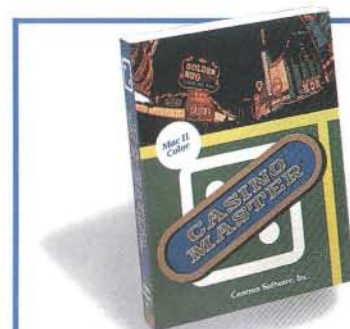
## EDUCATION & RECREATION

<b>Accolade</b>		
	Stratego or Balance of the Planet	ea. 29.
8217	Ishido: The Way of the Stones	32.
8220	Jack Nicklaus Greatest 18	34.



**Applied Engineering**  
8938 *DataLink LC*—A 2400/9600 data/send-fax modem, includes math chip socket, extra serial port, V.42bis (optional), upgrade path to receive fax. It's the one enhancement your Macintosh LC needs... \$265.

<b>★Aldus/Silicon Beach ... 30 day MBG</b>		
	Dark Castle or Beyond Dark Castle ea.	\$32.
<b>★Ars Nova ... 30 day MBG</b>		
1215	Practica Musica 2.2	69.
<b>★Baseline Publishing ... 30 day MBG</b>		
7785	Talking Moose 3.0	23.
<b>★Beacon Technology ... 30 day MBG</b>		
	HyperBible 2.0 (KJ or NJ)	ea. 125.
<b>★Bogas Productions ... 60 day MBG</b>		
9279	Studio Session MIDI Utility	59.
6135	Super Studio Session w/Music Library	99.
<b>Bright Star Technology</b>		
1402	Alphabet Blocks 1.0	30.
<b>Broderbund Software</b>		
4314	Type! 1.0	18.
6516	The Playroom 1.1 (CP)	29.
	Carmen Sandiego Series (CP)	ea. 29.
8266	SimEarth 1.0	40.
4966	SimCity 1.2 (CP)	29.
5871	SimCity Supreme 1.2C	47.
<b>Bullseye</b>		
4074	P51 Mustang (CP)	35.
<b>Carina Software</b>		
5726	Voyager 1.2	87.



**Centron Software**  
*Casino Master*—Turn your Mac into a casino! Realistic graphics, help/advice windows, card counting manual with rules/strategy. Includes Blackjack, Craps, Roulette, Baccarat and Poker. 8525 (B&W)... \$41. 8524 (Color)... \$45.

<b>★Casady &amp; Greene ... 60 day MBG</b>		
2268	Crystal Quest 2.2	29.
	Mission Starlight or Sky Shadow	ea. 29.
<b>Centron Software</b>		
8525	Casino Master (B&W)	41.
8524	Casino Master (Color)	45.
<b>Coda Music Systems</b>		
8188	MusicProse 2.0	299.
5604	Finale 2.5	549.
<b>Davidson &amp; Associates</b>		
1734	Math Blaster! 1.0 (CP)	29.
6128	Math Blaster Mystery (CP)	29.
8278	Alge-Blaster Plus	35.
<b>EARTHQUEST</b>		
8050	EARTHQUEST 1.0	48.
<b>Electronic Arts</b>		
6716	Pipe Dreams 1.0	17.
8643	Harpoon	39.
<b>★Great Wave ... 30 day MBG</b>		
	KidsTime, Amer. Discov., KidsMath	ea. 26.
4334	NumberMaze (B&W) 26. 8527 (Color)	36.
	NumberMaze Decimals & Fractions	
8043	(B&W) 26. 8044 (Color)	36.
2271	Concertware & MIDI	98.



# goes out overnight



## Passport Designs

8250 *Encore 1.3.1*—Play, compose & print music. Supports tempo changes, industry standard MIDI files & real time transcription. . . . \$379.  
9442 *AudioTRAX*—Powerful MIDI sequencer with ability to record & playback 2 digital tracks. 129.

## ★HyperGlot Software ... 30 day MBG

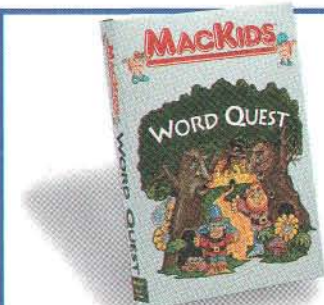
Word Torture 4.0 - Beginner to Advanced (Span., Fren., Germ., Ital. & Rus.) ea. 35.  
Pronunciation Tutor - Beginner (Span., Fren.) ea. 35. (Germ., Chin.) 39.  
Verb Tutor - Intermediate (Spanish, French, German) . . . ea. 39.  
9349 Chinese Survival Manual . . . . . 39.  
9348 Chinese Writing Tutor . . . . . 39.  
6611 Kanjmaster - Beg. (Japanese) . . . . 99.  
8026 Easy Kana . . . . . 129.

## Individual Software

7425 Training for Microsoft Word 4.0 . . . . 35.  
4990 Training for Aldus PageMaker 4.0 . . . 35.

## ★Inline Design ... 30 day MBG

5870 Bomber 1.3 (includes headphones) 32.  
7622 Darwin's Dilemma 1.0. . . . . 32.  
8809 Tesserae 1.0 . . . . . 32.



## Nordic Software ... 30 day MBG

8260 *Word Quest 1.0*—Spelling can be fun! Correctly spell the Enchanted Words to rid the kingdom of the curse of the Evil Ice Witch. Words for grades 1-6 included. Requires HyperCard. . . . . \$31.

- ★**Learning Company ... 30 day MBG**  
2670 Reader Rabbit 2.2 (CP) (ages 4-7). \$30.  
5453 Talking Math Rabbit 2.0 (ages 4-7) . 30.
- ★**Leister Productions ... 30 day MBG**  
7126 Reunion 2.0 . . . . . 95.
- ★**Microsoft ... 30 day MBG**  
2868 Flight Simulator 1.02 (CP) . . . . . 32.
- ★**Mysterium Tremendum ... 30 day MBG**  
5841 Moriarty Revenge (CP) . . . . . 32.
- ★**Nordic Software ... 30 day MBG**  
8258 Turbo Math Facts 1.1 . . . . . 26.  
8260 Word Quest 1.0. . . . . 31.  
8257 PreSchool Pack 1.0 . . . . . 36.
- ★**Passport Designs**  
8253 TRAX 2.0 . . . . . 59.  
9442 AudioTRAX. . . . . 129.  
8254 Desktop Music Creativity Kit . . . . 189.  
3117 Master Tracks PRO 4 4.1.4. . . . . 319.  
8250 Encore 1.3.1. . . . . 379.  
8880 Alchemy . . . . . 439.
- ★**Penton Overseas ... 30 day MBG**  
VocabuLearn/ce Levels I & II (French, Italian, Spanish, German, Russian, Hebrew, & Japanese). ea. 35.
- ★**Personal Training Sys. ... 60 day MBG**  
We carry over 60 learning levels from beginner to advanced for Quark XPress, Excel, Persuasion, FileMaker II/Pro, PageMaker, Illustrator, FreeHand, Word, HyperCard, and the Mac . . . . . ea. 52.
- ★**Postcraft**  
7601 Citadel & Citadel Secrets Hint Book. 31.
- ★**Premier Technology**  
Strategic Conquest or NetTrek . ea. 34.
- ★**Sierra On-Line**  
3397 Leisure Suit Larry (CP) . . . . . 23.
- ★**Sir-Tech Software**  
8228 Wizardry II: Knight of Diamonds (CP) 29.
- ★**Software Toolworks**  
4619 Mavis Beacon Typing 1.3 (CP) . . . . 32.  
4588 Life & Death (CP) . . . . . 32.
- ★**Spectrum Holobyte ... 30 day MBG**  
Tetris 1.1 or Welltris 1.1 . . . . . ea. 22.  
8180 Faces . . . . . 24.  
3459 Falcon 2.2 . . . . . 32.
- ★**Spinnaker ... 30 day MBG**  
2328 Sargon IV (CP) (chess) . . . . . 28.
- ★**Strategic Studies ... 30 day MBG**  
8084 Halls of Montezuma . . . . . 26.  
8085 Panzer Battles. . . . . 26.
- ★**StudyWare**  
ACT, GMAT, GRE, or SAT Prep . ea. 29.  
8098 LSAT Prep for the Mac . . . . . 35.
- ★**Terrace Software ... 30 day MBG**  
8192 Mum's The Word (gardening) . . . . 79.
- ★**Toyogo ... 30 day MBG**  
7836 Go Junior . . . . . 19.  
7624 Nemesis Go Master 4.7. . . . . 41.  
7623 Nemesis Go Master Deluxe 4.7. . . . 85.
- ★**Voyager ... 30 day MBG**  
Amanda Stories (vol. 1, 2 or 3) . ea. 18.
- ★**XOR ... 30 day MBG**  
8061 MacSki 1.01 . . . . . 39.  
6040 MacGolf Classic 1.0 (CP) . . . . . 52.



## Beagle Bros. ... 30 day MBG

7691 *Flash 1.1*—Start flashing your co-workers today! The friendliest way to transfer files over AppleTalk—without a File Server. Transfer files from the Finder or within any application. \$125.

## NETWORKS & COMMUNICATIONS

### ★Abaton ... 30 day MBG

6266 InterFax 24/96 Modem . . . . . 349.

★**Applied Engineering**  
8365 DataLink Express . . . . . 175.  
DataLink/Mac or Mac Portable ea. 209.  
8938 DataLink LC . . . . . 265.  
8362 QuadraLink . . . . . 209.

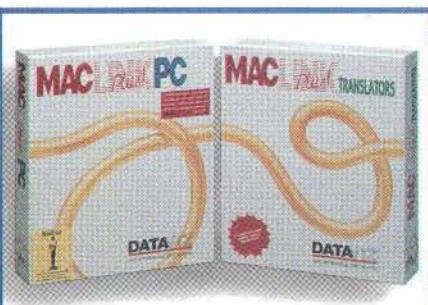
### ★Beagle Bros. ... 30 day MBG

7691 Flash 1.1. . . . . 125.

### ★CE Software ... 60 day MBG

5173 QuickMail 2.2.3 (10 user). . . . . 315.

★**CompuServe**  
1676 Macintosh Membership Kit 1.03 . . . 23.  
1673 CompuServe Navigator 3.0 . . . . . 49.  
1674 Membership Kit/Navigator Bundle . 68.



## DataViz ... 60 day MBG

1823 *MacLink Plus/PC 5.0*—Transfer & translate documents between Mac & PC. Over 250 spreadsheet, word, database, & graphic translators. Both contain DOS Mounter software . . \$129.  
4842 *MacLink Plus/Translators 5.0* (Qty. 250). 109.

280C



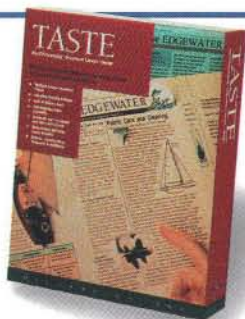
# MacConnection®

1-800/334-4444

© Copyright 1991 PC Connection, Inc. MacConnection is a division and registered trademark of PC Connection, Inc., Marlow, NH. All other trademarks remain the property of their respective companies.



# For delivery that



## DeltaPoint ... 60 day MBG

8967 *Taste 1.0*—A fast and easy-to-use word processor with page layout capability, a fully integrated draw layer, an internal address book with built-in mail merge, and full Macintosh color support. .... \$84.

## ★DataViz ... 60 day MBG

1823 MacLink Plus/PC 5.0 ..... 129.  
4842 MacLink Plus/Translators 5.0. .... 109.

## Dayna Communications

8720 DaynaTALK (5 Pak) ..... 379.  
8721 DaynaTALK (10 Pak) ..... 689.  
8719 EtherPrint ..... 349.

## ★Dove Computer ... 60 day MBG

6758 DoveFax Desktop 1.1.1 ..... 295.

## ★Dow Jones ... 30 day MBG

5295 News/Retrieval Membership Package 24.

## EveryWare

8077 AllShare 1.0 ..... 139.

## ★Farallon Computing ... 30 day MBG

5707 Timbuktu 3.1 ..... 95.  
4866 Timbuktu/Remote 2.0 ..... 123.  
6371 Timbuktu/Remote Access Pack .. 845.  
8707 Liaison 3.0 ..... 259.  
6273 PhoneNET StarConnector 10-Pack. 129.  
4869 PhoneNET Connector 10-Pk (DIN-8) 198.  
2206 PhoneNET StarController 300 .... 825.  
6687 PhoneNET StarController-EN .... 1589.  
6766 MediaTracks ..... 189.  
6768 MediaTracks Multimedia Pack. .... 319.

## ★Freemsoft ... 60 day MBG

6115 White Knight 11 ..... 85.

## ★Global Village ... 30 day MBG

8946 TelePort A300 ..... 129.  
8945 TelePort/FAX ..... 185.

## Hayes

2300 Smartcom II 3.2 ..... 84.  
2307 Smartmodem 2400. .... 349.  
5991 V9600 Baud Modem ..... 689.

## Insignia Solutions

7557 Access PC 1.0 ..... 62.  
7058 SoftPC-AT/EGA Module ..... 125.  
4089 SoftPC 1.3 ..... 245.

## Intel Corporation

5119 2400EX Modem ..... 179.  
6420 2400EX MNP Modem. .... 229.  
8193 9600EX Modem (w/QuickLink II) .. 549.

## International Business Software

8581 DataClub (3 user) 199. 8580 (10 user) 539.

## ★Kenneth Tech. ... 30 day MBG

5631 Rapport 1.3.4 ..... 195.  
7588 Drive 360 (5 1/4") ..... 249.  
7590 Drive 1200 (5 1/4") ..... 249.  
5632 Drive 2.4 (3 1/2") (incl. FastBack II) . 325.

## ★Microcom ... 30 day MBG

7459 CarbonCopy Mac (Single) ..... \$117.  
7465 CarbonCopy Mac (Twin Pack) ... 169.  
8027 MacModem V.32 ..... 689.

## ★Microsoft ... 30 day MBG

9444 Microsoft Mail 3.0 (1-5 user) ..... 269.

## ★Nuvotech ... 60 day MBG

3000 TurboNet ST (DIN-8) ..... 30.  
6751 TurboNet ST (12-Pack) ..... 279.  
6272 NuvoLink SC ..... 389.

## ★Orchid Technology ... 30 day MBG

6949 OrchidFAX Modem 1.06 ..... 429.

## ★Practical Peripherals ... 30 day MBG

3102 2400 Baud External Modem ..... 179.  
8994 2400 V.42 bis Modem ..... 209.  
7934 PM9600SA Modem 1.26 ..... 489.  
3089 Mac Communications Pack ..... 225.

## ★Preferred Publishers ... 30 day MBG

8943 DoubleTalk (1 Pak) 79. 8942 (2 Pak) 129.

## ★Prometheus ... 30 day MBG

8350 2400 Mini for Mac ..... 149.  
8348 24/96 Minifax ..... 189.  
8762 Travel Modem ..... 189.  
8349 Maxfax ..... 289.  
8709 2400M Plus ..... 219.  
8738 9600M Plus ..... 599.  
8990 Ultima 9600 ..... 689.



## ASD Software ... 30 day MBG

MacAccessCard Reader combined with FileGuard 2.5 secures your Mac against unauthorized users.  
7085 FileGuard Extended 2.5.2 (1 user) ..... \$139.  
9440 MacAccessCard Reader (regs. FileGuard) .. 299.  
9439 MacAccessCard/FileGuard (1) Bundle. .... 399.

## ★Shiva ... 30 day MBG

3444 NetSerial 3.3 ..... 275.  
4347 NetBridge ..... 409.  
4942 TeleBridge ..... 409.  
3443 NetModem V2400 3.3 ..... 339.  
6917 NetModem V.32 (V.42 & V.42 bis) . 1169.  
6519 EtherGate ..... 1619.  
8189 FastPath IV ..... 1889.

## Sitka/TOPS

4188 TOPS Teleconnector (DIN8) ..... 23.  
3720 TOPS Flashcard ..... 155.  
6264 TOPS Networking Bundle 3.0 .... 187.

## ★Software Ventures ... 30 day MBG

3455 MicroPhone II 3.0 ..... 215.

## ★Solutions, Inc. ... 60 day MBG

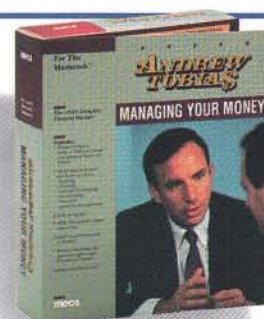
6720 FAXGATE Plus 1.1.2 ..... 239.

## ★Synergy ... 30 day MBG

6618 VersaTerm 4.5 ..... 87.  
6619 VersaTerm-PRO 3.5 ..... 173.

## ★Traveling Software ... 60 day MBG

3729 LapLink Mac III Connectivity Pac .. 93.



## MECA ... 60 day MBG

2796 *Managing Your Money 4.0*—All new interface with version 4.0 makes Managing Your Money even easier! Comes complete with CheckFree electronic billpaying options as well as multiple small business features ..... \$99.

## INPUT/OUTPUT

## ★Abaton ... 30 day MBG

7432 Scan 300/GS (regs. Scan Kit) .... 999.  
Includes free ProPoint (\$79 value).

## American Power

5895 UPS 110SE ..... 209.  
6686 UPS 370ci ..... 339.

## Caere

8124 Typist ..... 479.  
4476 OmniPage 2.12 ..... 495.  
6660 OmniSpell 1.0 ..... 69.  
6658 OmniDraft 1.0 ..... 69.

## Chinon

8814 DS-3000 Scanner w/Dig. Darkroom 699.  
8815 DS-3000 Scanner w/OmniPage .. 1069.

## Computer Friends

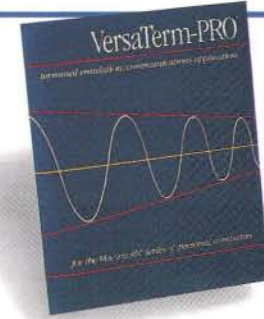
8271 ColorSnap 32+ ..... 649.

## ★CoStar ... 30 day MBG

6090 LabelWriter ..... 179.  
6067 LabelWriter Labels ..... 9.  
7452 LabelWriter Labels (12-Pak) ..... 49.

## ★Datadesk ... 30 day MBG

6901 Switchboard (modular keyboard) . 159.



## Synergy ... 30 day MBG

6619 *VersaTerm-PRO 3.5*—Communications program including Apple Communication Toolbox support & new protocol tools (TCP/IP, Telnet, FTP, LAT, ADSP, Serial Modem). Supports transfer for XModem, YModem, & Kermit protocols ..... \$173.





## “President, Owner, Typist, and Janitor”

Dear MacConnection,

As the President, Owner, Typist, and Janitor of Extraordinary Word Processing, let me thank you from the bottom of my heart. You have saved my life on a few occasions. My budget is a shoestring. I buy products as the need arises. I say I can do the job, order the software from you, and pray I can

figure it out quickly. Recently, I got a call for a database job so I ordered one from MacConnection. The next morning, the doorbell rang. I assumed it was a customer, but it was my order! You promise a 24-hour turnaround, but if anything had gone wrong that day, I would have been doomed. Thanks,

MacConnection, for letting me fly by the seat of my pants.

*Kathleen Tauson*

Kathleen Tauson  
Extraordinary Word Processing  
Boston, MA

# MacConnection®

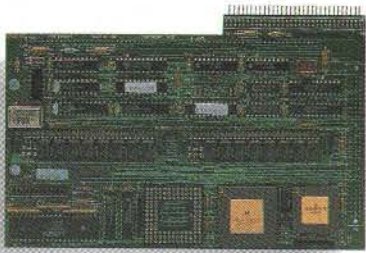
1-800/334-4444

MacConnection, 14 Mill Street, Marlow, NH 03456 603/446-7711 FAX 603/446-7791

Just for the record, all the ads in this series feature photographs of real live MacConnection customers and the real live letters they wrote us. Really!



# We ship 'til 3:15 a.m.!



## Total Systems ... 30 day MBG

**Gemini Accelerator**—A cost effective and quick solution for slow processing times. Installs easily in a Mac SE. With the optional Plus Kit, it can also be installed in Mac 128s, 512s, 512Es, and Pluses. .... call

## SuperMac Tech.

- 7451 Dataframe XP 200 Hard Drive ... 1399.
- 5451 Dataframe XP 330 Hard Drive ... 2249.

## ★Total Systems ... 30 day MBG

- 32-bit RAM Exp. Module ... call
- 68882 Math Coprocessors ... call

## ACCESSORIES

### Apple Computer

- 7748 Personal LaserWriter Toner Cart. ... 89.
- 1115 LaserWriter II Toner Cartridge ... 105.

## ★Avery ... 60 day MBG

- 4811 Transparencies 8 1/2" x 11" (Qty. 50) 22.
- 4807 Laser Labels 1" x 2 5/8" (Qty. 3000) 24.
- 5392 Disk Labels 3 1/2" Laser (Qty. 630) 29.

## ★Basic Needs ... 60 day MBG

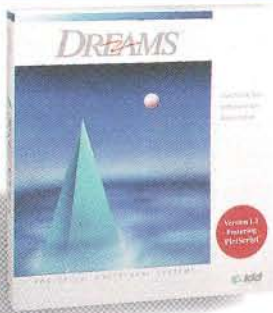
- Nylon Dust Covers ... 10. to 13.
- 7413 Mac IIcx/ci Monitor Stand ... 48.

## ★Computer Coverup ... 60 day MBG

- 1723 ImageWriter II Cover ... 8.
- 1725 Mac SE Ext. Keyboard Cover set ... 10.

## ★CoStar ... 30 day MBG

- 7453 The Organizer Jr. ... 82.
- 6091 The Organizer ... 199.



## Innovative Data Design

4707 **Dreams 1.1**—Advanced, yet easy-to-use precision drawing and design software. Features include parallel line tool, glue and unglue, add and subtract, trim and fillet tools, true associative dimensioning and more. .... \$419.

## Curtis Manufacturing

- 8046 MVP Mouse ... \$89.

## ★Goldstein & Blair ... 30 day MBG

- 8198 "What Do I Do Now" Book ... 9.
- 2267 The Macintosh Bible (3rd Ed.) ... 19.

## ★I/O Design ... 30 day MBG

- 8812 Ultimate Classic Carrying Case ... 64.
- 6129 Ultimate SE/Ext. Carrying Case ... 79.

## ★Kensington ... 30 day MBG

Full line available. Partial listing.

- 2559 Apple Security Kit ... 33.
- 9303 Keyboard Shelf ... 39.
- 6763 SE Radiation/Anti-Glare Filter ... 52.
- 2566 System Saver Mac (platinum) ... 63.
- 5064 Apple Color Monitor Polarizing Filter ... 63.
- 9301 PassProof ... 65.

## ★MacConnection ... 60 day MBG

- 4623 Solid Oak Disk Case (holds 90 disks) 32.
- 8795 Switch Box (2 Pos.) 32. 8796 (4 Pos.) 49.

## ★Mobius Technologies ... 60 day MBG

- 4470 Fanny Mac QT (Platinum) ... 55.

## ★Moustrak ... 60 day MBG

- 2694 Moustrak Pad (standard 7" x 9") ... 8.
- 2692 Moustrak Pad (large 9" x 11") ... 9.
- 2693 Moustrak Pad L/F (large 9" x 11") ... 10.



## MacConnection ... 2 year warranty

**SIMMs**—Crank your system's memory to the max with our very own, very reliable 80ns SIMMs. Includes complete instruction booklet & installation video (VHS or 8mm). See line listing for specifics.

## Ribbons

- 3255 ImageWriter II Ribbon Black ... 4.
- 9362 ImageWriter II Ribbon Black (12 Pack) 29.
- 3261 ImageWriter II Ribbon Multi-4-Color ... 9.

## ★Sopris Softworks ... 60 day MBG

- Ripstop Nylon Dust Covers ... call.
- 4014 High Trek Mac SE & Ext. Kybd. Case 69.

## ★Targus ... 60 day MBG

- 3617 Mac Plus/SE Carry Case ... 55.
- 4015 Mac SE & Ext. Kybd. Carry Case ... 69.

## ★Tripp Lite ... 30 day MBG

- 6200 Isobar 6 (surge suppressor, 6 outlets) 59.

## STORAGE MEDIA

## ★Sony ... 60 day MBG

- 3297 3 1/2" DS/DD Disks (10) ... 12.
- 6148 3 1/2" DS/DD Disks 3 Pak (30) ... 29.
- 3298 3 1/2" HD Disks 1.44 Meg (10) ... 19.
- 6375 3 1/2" HD Disks 3 Pak (30) ... 49.
- 8185 QD2040 Tape Cartridge ... 19.

## ★MacConnection ... 60 day MBG

- 6592 44 Meg Removable Cartridge ... 75.



## MegaGraphics

19" Rival Monochrome System for SE, SE/30 or II—Macworld Editors' Choice in large screens. Also includes coupon book with over \$3000 in savings on special 3rd party products. ea. \$1199.

## ★MAXELL ... 60 day MBG

- 2792 3 1/2" DS/DD Disks (10) ... 13.
- 2793 3 1/2" HD Disks 1.44 Meg (10) ... 21.

## ★3M ... 60 day MBG

- 3943 DC2000 40 Mb Data Cartridge ... 19.

## OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order (in the U.S.).
- No sales tax, except Ohio residents (please add applicable tax).
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped First Class Mail.
- International orders U.S. \$250 minimum.
- Upon receipt and approval, personal and company checks clear the same day for immediate shipment of your order.
- Corporate P.O.s accepted subject to credit approval.
- COD max. \$1000. Cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- Our order lines are now open 24 hours a day Monday through Friday, and Saturday 9:00 AM to 5:30 PM EST. You can call our business offices at 603/446-7711 Monday through Friday 9:00 AM to 5:30 PM EST.

## SHIPPING

**Continental US:** Barring events beyond our control, all credit card orders phoned in weekdays by 3:15 AM EST will ship Airborne Express for delivery the next business day. Which means same day delivery for orders placed between midnight and 3:15 AM EST. (Some orders may ship by UPS Ground for next day delivery). Saturday delivery available to many areas upon request. Some areas require an additional day delivery. The total freight charge on any order placed with MacConnection is only \$3.  
**Hawaii, Alaska, Canada, Puerto Rico and U.S. Virgin Islands:** Call 800/334-4444 for information on shipping and charges.  
**All other areas:** Call 603/446-7711 or FAX 603/446-7791 for information.



# is unsurpassed.

## ★DayStar Digital ... 30 day MBG

Listed items do not include coprocessor.

8556	FastCache for Mac IIci	\$279.
8586	40 MHz PowerCache IIci	949.
8585	50 MHz PowerCache IIci	1689.
8583	SCSI PowerCard	1095.
	25 MHz PowerCard 030 (II, IIx, IIcx) ea.	1095.
	40 MHz PowerCard 030 (II, IIx, IIcx) ea.	1389.
	50 MHz PowerCard 030 (II, IIx, IIcx) ea.	1895.

## GDT Softworks

6256	PrintLink Collection 4.0	59.
6151	JetLink Express 2.0	89.
8960	ParaLink Express	99.

## Hewlett-Packard

6514	HP DeskWriter Printer	759.
6754	HP LaserJet III (with toner)	1699.
9355	HP LaserJet IIP (with AppleTalk, 1 Meg & PostScript Cartridge)	1799.

## ★Kensington ... 30 day MBG

	Turbo Mouse 3.0 (Plus or ADB) ea.	107.
	<b>Kodak</b>	
6730	DICONIX M150 Plus Printer	399.

## ★Kraft Systems ... 60 day MBG

7519	KM30 ADB Joystick	42.
------	-------------------	-----



## Logitech ... 30 day MBG

5082 ScanMan Model 32 Gray-Scale Scanner—Scan in any type of image you need to enhance your Macintosh document. 100-400 dpi with ergonomic case and gray-scale editing makes scanning a breeze. \$299.

## ★Logitech ... 30 day MBG

5082	ScanMan Model 32 G-Scale Scanner	299.
------	----------------------------------	------

## Magnavox

6690	14" Color Monitor with Micron Xceed for SE/30 (640 x 480) ... special	849.
------	-----------------------------------------------------------------------	------

## MegaGraphics

	16" 8-bit System for SE/30 or II ea.	2595.
7841	16" 24-bit Color System for Mac II	4895.
	19" Rival Sys. SE, SE/30, or II ea.	1199.
	19" 8-bit System for SE/30 or II ea.	4295.
7840	19" 24-bit Color System for Mac II	6395.
	19" G/S System for SE/30 or II ea.	1895.

## ★Micron ... 30 day MBG

7149	Xceed IIci-128 Cache Card	239.
6680	Xceed for SE/30 (640 x 480)	329.

## ★MicroSpeed ... 30 day MBG

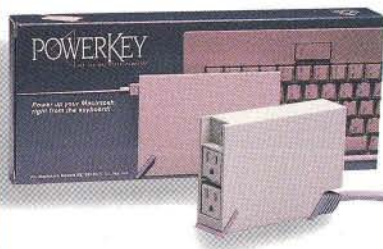
6620	MacTRAC	62.
6621	MacTRAC ADB	75.

## ★Mouse Systems ... 30 day MBG

7560	TrackLab ADB	69.
	Little Mouse or Little Mouse Plus. ea.	74.

## ★Nutmeg Systems ... 30 day MBG

	15" Monitor: SE, SE/30, II or IIsi ea.	599.
	19" Monitor: SE, SE/30, II or IIsi ea.	995.



## Sophisticated Circuits ... 30 day MBG

8009 PowerKey—Turns your Mac & peripherals on from the keyboard & off with "Shut Down." Includes software for scheduling on/off & macro events for unattended operation. Four filtered outlets provide surge & overload protection \$65.

19" Monitor: G-Scale SE/30, II, IIsi ea. 1295.

20" Color System: SE/30, II, IIsi ea. 2595.

## ★Orange Micro ... 30 day MBG

3036	Grappler 2.0 (9 pin)	87.
6229	Grappler LX	134.

## Pacific Data Products

7412	Pacific Page PE 4.0 for the Mac	529.
------	---------------------------------	------

## Passport Designs

3115	MIDI Interface	85.
------	----------------	-----

## RasterOps

8526	Video Expander	529.
7469	ColorBoard 264 for SE/30	679.
7457	Video ColorBoard 364	975.
8944	RasterOps 24STV	1299.
	Business Color System: SE/30 or II	2995.

## ★Sophisticated Circuits ... 30 day MBG

8009	PowerKey 65. 8008 Wake-Up Cable	32.
------	---------------------------------	-----

## TheComplete PC

6104	Half-Page Scanner/400	295.
------	-----------------------	------

## Thunderware

4994	LightningScan 400	385.
------	-------------------	------

## ★Total Systems ... 30 day MBG

8653	Galileo I Video Board (for Mac SE)	449.
9282	Galileo Video (for Mac Plus)	449.
8989	High Speed SCSI for Mercury 16+	189.



## Nutmeg Systems ... 30 day MBG

19" Gray-Scale Display for SE/30, II or IIsi—Delivers a flicker-free 72 dpi image at 78 MHz with 256 shades of gray. Includes video card, tilt/swivel base and anti-glare screen. Please see line listings for additional Nutmeg products. ... ea. \$1295.

7817	16 MHz Mercury 030 (for Mac SE)	\$389.
8624	16 MHz Mercury 030 (for Mac Plus)	519.
7816	20 MHz Gemini 030	799.
8708	25 MHz Gemini 030 w/o copro.	1179.
7814	33 MHz Gemini II 030	1375.
8371	40 MHz Gemini II 030	1499.

## MEMORY & DRIVES

### SIMMs ... 2 year warranty

Includes free instructional video tape.

1107	1 Meg SIMMs (80ns)	57.
8316	2 Meg SIMMs Set (80ns)	call
9437	2 Meg SIMM for IIsi & LC	call
7497	1 Meg SIMMs for IIx (set of 4)	239.

### Applied Engineering

8361	1.44 Meg High Density Drive	229.
8369	MacRam Portable with 1 Mb	399.
	MacRam Classic with 0, 1, or 3 Mb	call



## Cutting Edge ... 30 day MBG

5456 45 Meg Removable Drive—Offers the convenience of removable media with the reliability of Winchester technology. Features the popular Syquest mechanism & includes a cartridge. \$599.  
5736 45 Meg Removable Cartridge 79.

## ★Cutting Edge ... 30 day MBG

3989	800K External Disk Drive	149.
5133	20+ Meg Hard Drive	329.
3990	30+ Meg Hard Drive	389.
3991	45+ Meg Hard Drive	439.
5275	60+ Meg Hard Drive	489.
5276	80+ Meg Hard Drive	529.
5456	45 Meg Removable Drive	599.
5736	45 Meg Removable Cartridge	79.

## Dayna Communications

8723	DaynaFILE 360k Drive	449.
8722	DaynaFILE 1.2 5 1/4" Drive	449.
8927	DaynaFILE 1.44 Mb	629.
8724	DaynaFILE Dual 360k & 1.44 Mb	739.

## ★Dove Computer ... 60 day MBG

	MaraThon 030 Upgrades	ea. 529.
8186	MacSnap 524XE	199.
8187	MacSnap 524XS (w/SCSI Port)	249.
8649	MacSnap 596XE (4 Mb)	299.
8652	MacSnap 596XS (4 Mb w/SCSI Port)	365.

## Peripheral Land, Inc. (PLI)

8335	PLI TurboFloppy 1.4	309.
8333	PLI Sony 40 Turbo Ext. Drive	499.
8327	PLI Infinity 40 Turbo	749.
8331	PLI 80 Meg Ext. Drive	739.
8330	PLI 105 Meg Ext. Drive	779.

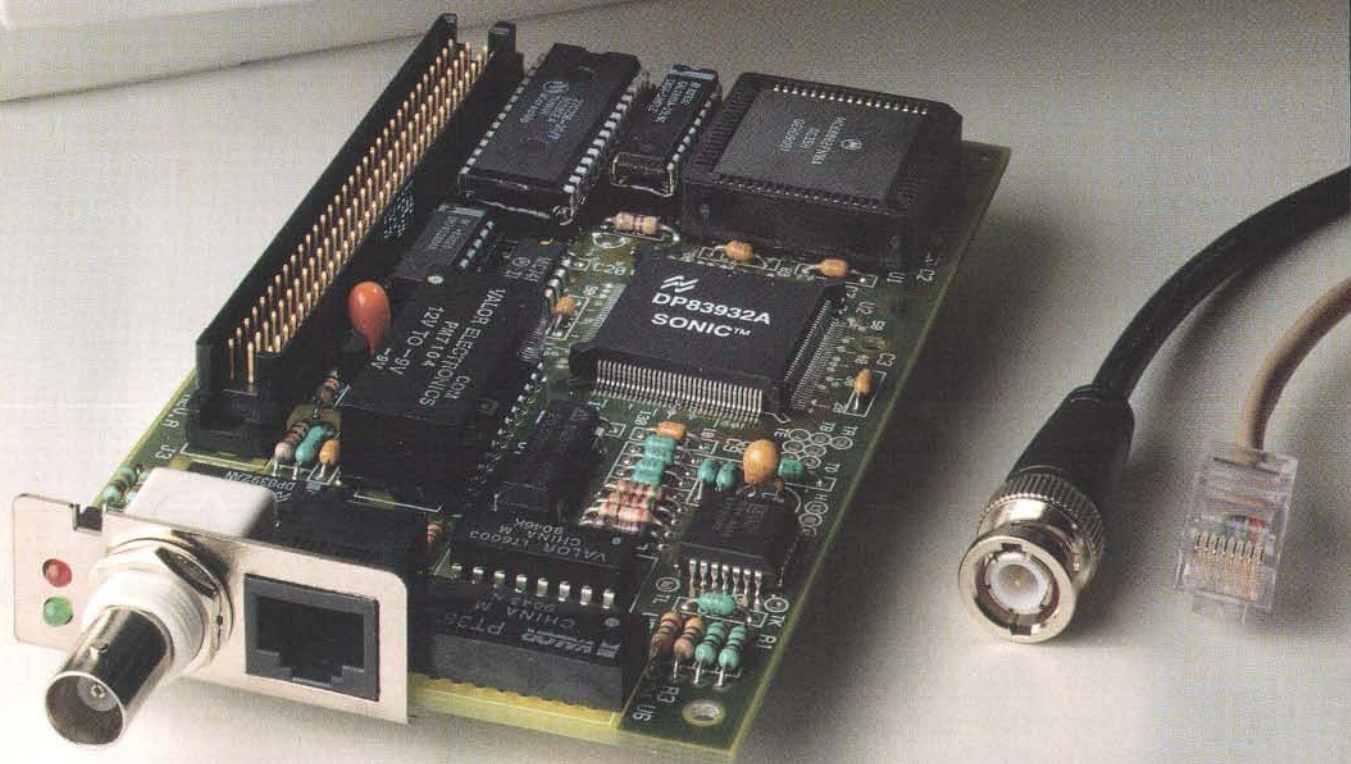
## Quantum

40 Meg & 80 Meg Internal Drives for Mac SE, SE/30, IIx, IIcx, IIsi & IIcx ... call





Macintosh LC



# Multiple Choice.

Little things mean a lot. Look closely at Asanté's new Ethernet™ card for the Macintosh LC and you'll notice the difference – choice.

Introducing the MacCon+™ LC Ethernet card from Asanté™. With auto-sensing ports for Thin and 10BaseT Ethernet, you choose the type of network simply by plugging into one of the ports – there are no jumpers or switches.



The MacCon+ LC has an on-board socket for adding an optional Motorola 68882 math co-processor.

Plus, we've included a socket for an optional floating point math co-processor. Everything you need. And all on one board.

And that's not all. The MacCon+ LC

Ethernet card from Asanté was also designed using the new SONIC™ controller chip which requires fewer components and also greatly enhances reliability. And like all of Asanté's products, the MacCon+ LC meets the IEEE Ethernet specifications to insure compatibility with all network software and hardware.

For all the right connections, call your dealer about the Asanté MacCon+ LC. It's not only loaded with choices, it's available today.



All Asanté products are backed with a 5-year, no-hassle warranty.



**ASANTÉ**

Asanté Technologies, Inc.  
404 Tasman Dr., Sunnyvale, CA 94089  
1.800.662.9686



# Know Your Rights

## A CONCISE GUIDE TO CONSUMER LAW

S

BY DEBORAH BRANSCUM

tate deceptive-trade laws can be a powerful weapon against unfair business practices. California's Consumers Legal Remedies Act, for example, makes trade unlawful under certain situations, including when the sale of goods or services is

said to be of a certain type or brand when they are another; when goods or services are advertised with the intent *not* to sell them as advertised; and when the affiliation, connection, association with, or certification by another is misrepresented.

As powerful as these state laws can be, they're not necessarily helpful to individuals whose complaints can't justify hiring an attorney. Still, state consumer agencies often use these laws to great effect.

### Fair Credit Act

One of the most useful federal consumer protection laws is the Fair Credit Act, which allows consumers to dispute credit card charges if products they purchased are not satisfactory or never materialized. Consumers must make a good-faith effort to resolve any dispute. If that doesn't work, they need to inform the credit card company of the disputed charge within 60 days of its appearance on a credit card statement. (The 60 days begins when the statement is mailed, not when it is received.) If a company charges a credit card for a product that has not been delivered or was damaged and returned, the cardholder should dispute the charge even if the company promises delivery or replacement soon. Otherwise, he or she will lose all protection if the company reneges on its promise.

Once the credit card company, usually a bank, has been notified, it becomes responsible for investigating the dispute. Within 90 days of receiving notice, the bank must either credit your bill for the disputed amount or send a written explanation of why the company believes the bill to be correct. Until that happens, you're not required to pay the disputed amount or any interest on that charge, according to *Credit Card Secrets* by attorney Howard Strong (Boswell Corporation, 1989).

### Mail-Order Rights

To protect yourself, use a credit card for any expensive purchases you make. Do not listen to companies that promise to expedite your order if you mail them a cashier's check, or companies that refuse to take credit cards—they may have cash-flow problems.

Mail-order customers have several rights under Federal Trade Commission regulations, various state laws, and U.S. Postal laws. The FTC's Mail Order Merchandise Rule says that a company must ship your order when promised—if you ordered by mail, not by telephone. If no specific date is promised, a product must be shipped no later than 30 days after you place the order. You have the right to cancel your order and get a prompt refund if your order isn't



shipped when promised or within the 30-day limit.

You should receive a so-called option notice if the seller cannot meet its delivery date. This notice shows the new shipping date and gives you the option of either canceling the order and getting a refund or agreeing to a new shipping date. If you cancel the order, the company is supposed to mail a refund promptly or credit your charge account within one billing cycle.

(There are some exceptions to the FTC rule, including photo processing, magazine subscriptions, seeds and plants, COD orders, and credit orders where the account is not charged until the product is shipped.)

### Warranties

Generally speaking, there are three types of warranties. Most major purchases have written warranties, governed by the federal Magnuson-Moss Warranty Act, but these are not legally required. There are also express warranties and implied warranties. An express warranty is a written or oral

(continues)



## WHERE TO TURN FOR HELP

**T**he U.S. Office of Consumer Affairs (202/634-4140) in Washington, D.C., offers a referral service for consumers who are unsure where to take their complaints.

Other agencies that may be useful are the U.S. Postal Service, which investigates mail-order problems that may involve fraud or false advertising, and the Federal Trade Commission, which was founded in 1917 to keep business competition free and fair. The Postal Service has the authority to investigate both criminal cases of mail fraud and civil cases that involve misrepresentation in mail-order marketing. To file a complaint, write to the regional chief inspector in your area: Western Region, U.S. Postal Service, San Bruno, CA 94098-0100; Central Region, Main Post Office Bldg., #712, Chicago, IL 60607-5401; Eastern Region, One Bala Cynwyd Plaza, #E-300, Bala Cynwyd, PA 19004-9000; Northeast Division, 2 Gateway Plaza, 8th Fl., Newark, NJ 07175-0001; and Southern Region, 1407 Union Ave., 10th Fl., Memphis, TN 38161-0001.

The FTC guards against false and deceptive advertising, among other duties, but doesn't resolve individual complaints. Instead, the agency looks for patterns of problems with specific companies before it moves to action.

To find out how to file a complaint, call one of the FTC's regional offices in Los Angeles (213/575-7575), San Francisco (415/744-7920), Seattle (206/553-4655), Denver (303/844-2271), Dallas (214/767-5501), Chicago (312/353-4423), Cleveland (216/522-4207), Atlanta (404/347-4836), New York (212/264-1207), or Boston (617/565-7240). Some cities have local numbers for the regional offices; check the government pages of your telephone directory to see if your city has one.

There are two trade groups that offer free dispute-resolution services that affect computer users.

The Direct Marketing Association in New York has a program available to anyone with an unresolved mail-order problem. Consumers are asked to write with the details of the complaint, including the name and address

of the company, the item or service ordered, and the date of the order. Photocopies of supporting documentation should be included and sent to Mail-Order Action Line, Direct Marketing Association, 6 E. 43rd St., New York, NY 10017-4646. The association works to resolve the problem within 30 days.

The Electronic Industries Association in Washington, D.C., also offers help through its Consumer Complaint Assistance Program. If an individual consumer is unable to resolve a dispute after contacting both the retailer and manufacturer involved, the association will review the complaint and, if warranted, will approach the manufacturer on the consumer's behalf. The association aims for resolving complaints within three weeks; the companies involved need not be members. Complaints involving computer hardware and peripherals should be mailed to Electronic Industries Association, 2001 Pennsylvania Ave., NW, Washington, DC 20006.

statement a company makes about a product's capabilities or features. If you decide to buy the product *as a result of the statements*, the statements "constitute an express warranty that you have a right to rely on. This is true even though the written warranty states there are no other warranties," writes attorney Ralph Warner in *Everybody's Guide to Small Claims Court* (Nolo Press, 1989).

(There's a difference between standard sales hyperbole, such as "this is the best database on the market," and an express warranty, such as "this database can search 1 million records in 60 seconds.")

For most new products there's also an implied warranty of merchantability, or fitness for use, that exists despite any written statement to the contrary. According to the FTC, "Implied warranties are created by state law and all states have them." Essentially, a seller promises that a pen will write, a car will run, and a hard drive will hold information.

Warner's book gives a good example of how different warranties work: Alan buys a computer and some expensive software from ABC Computer after explaining his accounting needs in detail. Two days later, it's clear that the program isn't sophisticated enough for Alan's complex accounting needs and that the salesperson was wrong when he said it was "ideally suited" for Alan's situation.

Although the software has no written warranty, "Alan can claim a breach of express warranty (the salesperson's statement that the software would meet his needs) and the implied warranty of general fitness or merchantability (it simply doesn't meet the reasonable standard of accounting packages)," writes Warner. "This latter claim would be hard to prove, however, if the software is adequate to accomplish more routine accounting tasks, just not sophisticated enough for Alan's special needs." The first claim—that the software breaches the express warranty—

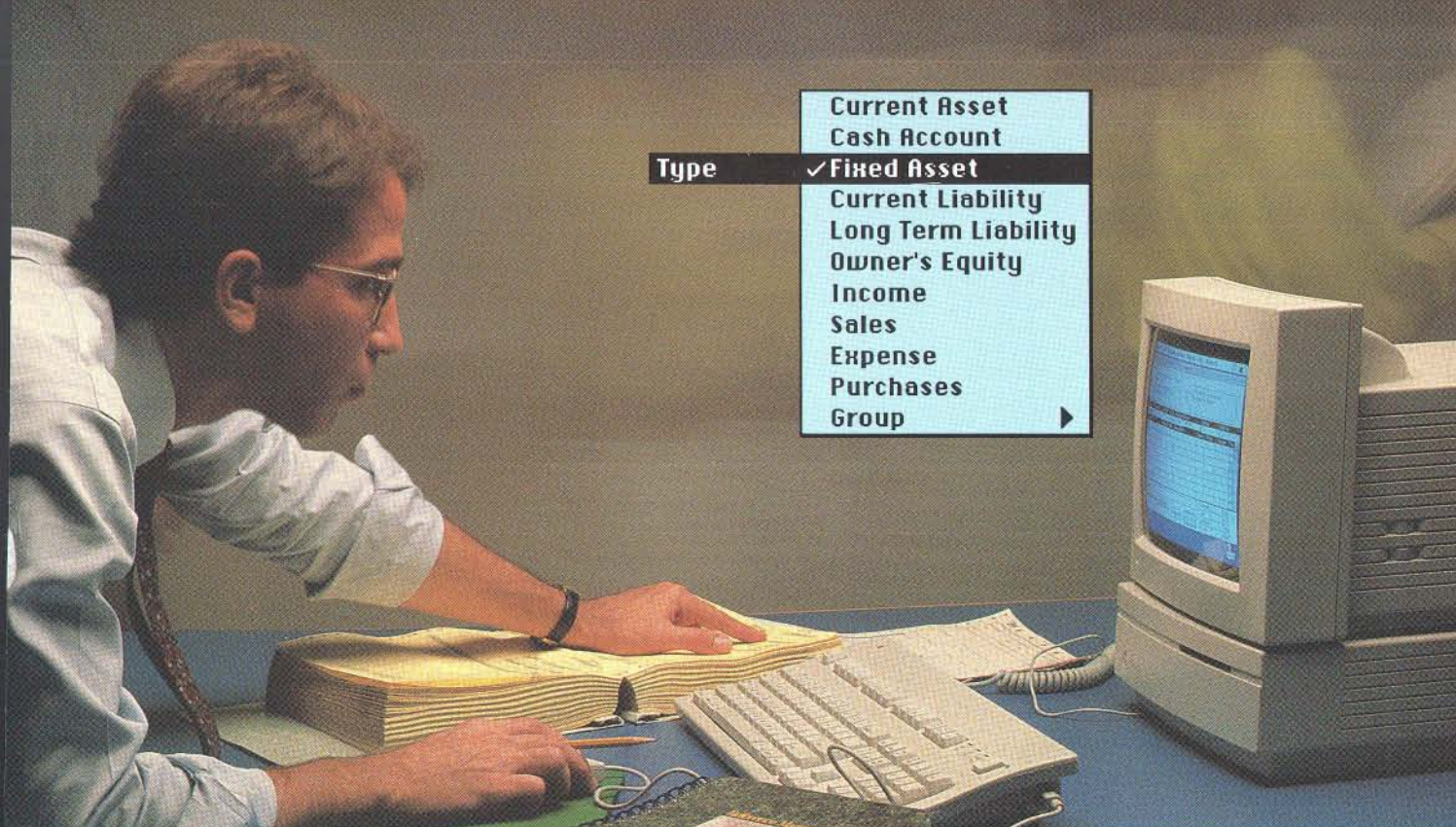
might also be difficult to prove if Alan has no witness to the salesperson's claims and nothing in writing. Before an important purchase, consider giving a salesperson a list of the specifications that must be met for a product to meet your needs, and keeping a copy of the list. Better yet, try to get the salesperson's promises in writing. Either way, if the product doesn't work for you but the dealer won't return your money, you'll have evidence for small-claims court.

### Small-Claims Court

Most states have small-claims courts, which give people an affordable way to press their claims without resorting to an attorney. The procedure varies from state to state, and the amount of the claim is limited. In California and Texas the claim is limited to \$2500; in New York the limit is \$2000; in Massachusetts, \$1500.

Generally, the procedure is simple. First you go to the small-  
(continues)





Type

Current Asset  
Cash Account  
✓ Fixed Asset  
Current Liability  
Long Term Liability  
Owner's Equity  
Income  
Sales  
Expense  
Purchases  
Group

# SERIOUS SMALL BUSINESS ACCOUNTING.

## The Highly Acclaimed Business And Financial Manager.

Accountant, Inc. has been carefully designed to handle the books for virtually any type of business: manufacturing, retail, professional or service. Its rock-solid, double-entry system includes General Ledger, Accounts Payable and Receivable, Inventory Management and Payroll - all fully integrated so information flows seamlessly through your office. And Accountant, Inc. is ready to run right out of the box, featuring easy chart of accounts setup and plenty of sample companies. All for just \$595.

## It Handles The Details.

You'll breeze through the normally laborious task of writing invoices, checks, credit memos and more. And since Accountant, Inc. is a 100 percent pure Macintosh product, it fully exploits the swift, simple (yet incredibly powerful) functionality of the Apple Macintosh.

## Instant Reports To Analyze Anything You Want.

But perhaps the most important feature of Accountant, Inc. is its ability to report and analyze. In fact, Accountant, Inc. will instantly create over 100 different types of reports that can tell you many things about your business, while they're happening. Income statements and balance sheets, account agings and transaction listings, payroll reports and sales breakdowns of any kind. Sharpen the focus with Accountant, Inc.'s remarkable set of easy-to-use analysis tools.

You'll quickly find out exactly what your customers are ordering, what inventory you're about to run out of, who owes you money, who adds finance charges, when a certain customer placed his last order and how much credit he has left.

### INCLUDES: FULLY INTEGRATED

**GENERAL LEDGER  
ACCOUNTS RECEIVABLE  
ACCOUNTS PAYABLE  
PAYROLL  
INVENTORY**

**PLUS! OVER 100 REPORTS**

## A More Enlightened Approach.

Accountant, Inc. does not duplicate the standard modular approach to accounting. Rather, the functions are task-oriented. For example, when you want to fill in a form (like an invoice), you'll find it under the "Forms" menu; reports can be found under the "Reports" menu. Simply select the task and Accountant, Inc. knows where to go. Now, everyone can get their own reports, and the information they need.

The technicians and accounting professionals at Softsync/BLOC have assembled the premier accounting system for the Mac and small businesses.

No painful setup, no learning curve, just a brief session with the documentation and you're on your way to a more informed future..

If you'd like to learn more about this system, call us toll-free:  
**1-(800) 933-2537**

... for more information, or see it at your local software dealer.

## Accountant, Inc.™

Requires: Apple Macintosh with 1 megabyte of memory and hard disk. Works with Plus, SE, SE/30, II, IIx, IIcx, IIfx, Portable, Classic, si, LC, ImageWriter, LaserWriter, AppleShare and Multifinder.

**Softsync/BLOC**

Accountant, Inc. from Softsync/BLOC, P.O. Box 143376, 800 Douglas Entrance, Coral Gables, Florida 33134. Copyright 1990, Softsync/BLOC. Accountant, Inc. is a trademark of Softsync/BLOC. All other trademarks acknowledged.

*You can easily fill in forms, like an invoice, right on screen. Just click on a customer name and all the information appears in the form.*



## WE DIDN'T THINK IT COULD HAPPEN TO US.

### But why take a chance?

Sure, we'd heard about virus protection. But it was hard to believe our innocent little Mac could be a breeding ground for computer disease and disaster. Until we started sharing more data disks. And spending more time online. Suddenly it really made sense to protect ourselves.

### So we decided to play it safe.

The last thing we wanted was some complex paranoid program that kept interrupting us while it went on search

and destroy missions. We wanted a program we could load and pretty much forget about.

That's why we chose Rival. It automatically checks all our files as they're opened (even INITs). If it finds any viruses it fixes them on the spot. And we can get new vaccines free from our user group or electronic bulletin board (or by subscription for a small fee).

So when it comes to virus protection, take our advice.

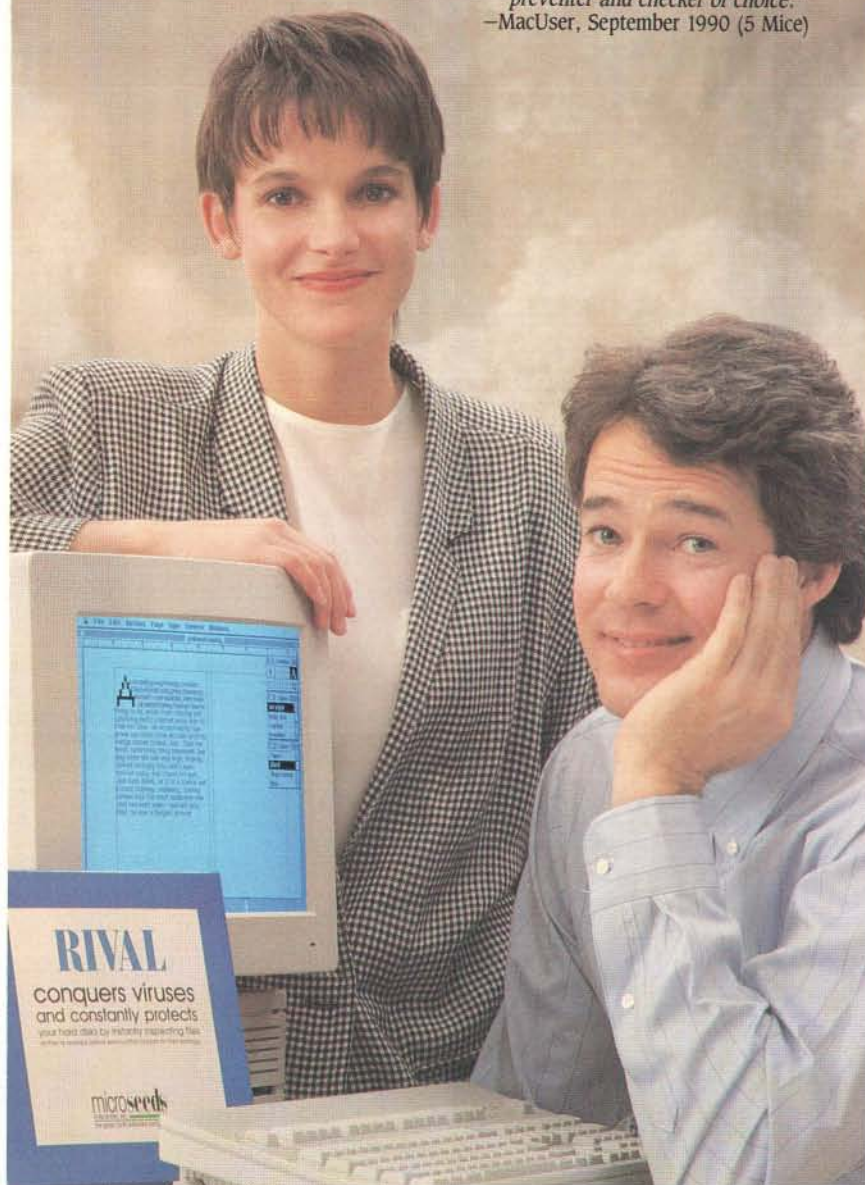
Don't get scared.  
Get Rival.

**microseeds**  
PUBLISHING, INC.  
the grass roots software company  
813/882-8635 FAX 813/884-5941

"faster and easier to use..."

—MacWEEK, July 10, 1990

"...has replaced SAM as my  
preventer and checker of choice."  
—MacUser, September 1990 (5 Mice)



Circle 228 on reader service card.

## SERVICE HERO

**L**orie J. Call of Santa Clara, California, writes in praise of Global Village Communications. After buying a TelePort modem, Call realized it would not work with her Mac IIsi, which has only one ADB port. She called Global Village tech support, which told her the company was retrofitting TelePorts with ADB Y-jacks at no charge. "They received it Thursday around lunchtime. By Saturday afternoon, I had my modem back, complete with ADB Y-jack!"

claims court clerk for a plaintiff's statement form, which you fill out and the clerk files for a fee (\$8 in California; \$20 in New York). The clerk assigns a case number and fills out another official form, which you sign. Then you arrange a court date with the clerk, make sure the defendants are served with papers, and show up for court. (In California, each county must provide a program of free advice to litigants; your local consumer agency should be able to offer advice if you decide to go this route.)

### More Advice

For best results in winning a dispute, keep written copies of all your complaints, keep comments short and polite, and be persistent. The January 1990 *Conspicuous Consumer* offers more details on complaining effectively; "Where to Turn for Help" has a list of trade associations with consumer services and helpful agencies. Once armed with the facts, don't get mad—get a refund. ■

(Research assistance by Carolyn Bickford.)

.....  
Send nominees for sainthood to Service Heroes, Macworld, 501 Second St., San Francisco, CA 94107 or via AppleLink (Macworld1). Conversely, drop *Conspicuous Consumer* a line if a company is ignoring you.



# Survival of the fittest.

Which color scanner is the natural selection?

When it comes to selecting the right scanner, be forewarned. It's a jungle out there. You may not get the quality you were promised.

The La Cie Silverscanner has evolved beyond all that. Just look at this comparison between the Microtek 300ZS and the La Cie Silverscanner. Each image was scanned at default settings with no corrections. This entire ad was then created and separated using Adobe Photoshop, QuarkXPress 3.0 and a Linotronic 330.

As you can see, Silverscanner is a more advanced species of scanner which provides superior color, gray scale and line art over other similar scanners. La Cie gives you more with OCR compatibility, fast color previews, versatile scanning controls, and up to 1200 dpi.

As a bonus, Silverscanner comes with Adobe Photoshop LE\*, Aldus PrePrint and La Cie's exclusive plug-in scanning modules for Photoshop, ColorStudio, Image Studio, and Digital Darkroom.

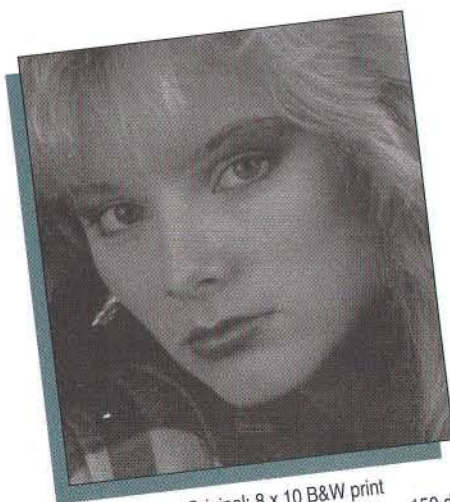
Silverscanner. Natural selection at its finest.



**La Cie Silverscanner:** 16 million beautiful colors, 256 smooth shades of gray, incredible line art, up to 1200 dpi all in a single pass.



**Microtek Scan** Original: 8 x 10 B&W print  
Brightness level: default Input resolution: 150 dpi  
File Size: 525K Output Resolution: 300 dpi  
Line Screen: 133 lpi Gamma Correction: None



**LaCie Scan** Original: 8 x 10 B&W print  
Brightness level: default Input resolution: 150 dpi  
File Size: 510K Output Resolution: 300 dpi  
Line Screen: 133 lpi Gamma Correction: None



**Microtek Scan** Original: 8 x 10 color print  
Brightness level: default Input resolution: 150 dpi  
File Size: 1,540K Output Resolution: 300 dpi  
Line Screen: 160 lpi Color Correction: None



**LaCie Scan** Original: 8 x 10 color print  
Brightness level: default Input resolution: 150 dpi  
File Size: 1,555K Output Resolution: 300 dpi  
Line Screen: 160 lpi Color Correction: None

Silverscanner only **\$1999!**

**FREE \$1400 value with the purchase of Silverscanner!**



**800-999-0143**

For product information, or to order, call toll-free.  
30-day money-back guarantee.\*\*



accepted with no surcharge

**LACIE**  
LIMITED  
A PLUS DEVELOPMENT COMPANY

Price includes shipping in U.S.A. All names are trademarks or registered trademarks of their respective companies. Prices, specifications and terms are subject to change without notice. Bundles in U.S.A. only.  
\*Call for details on Adobe Photoshop LE. Photoshop LE can be upgraded to Photoshop directly from Adobe. \*\*Limited guarantee. Call La Cie for restrictions on 30-day money-back limited guarantee. Subject photo by Dennis Carney Photography. Ad design and production by Graphic Witness. La Cie, Ltd., A Plus Development Company, 19552 SW 90th Court, Tualatin, OR 97062. Phone: (503) 691-0771, Fax: (503) 692-8289. © Copyright 1990.

Circle 197 on reader service card



radius



**WITH ONE SMALL ADDITION, WE CAN MAKE  
YOUR MACINTOSH AN ENTIRELY DIFFERENT MACHINE.**

In one fell swoop, Radius has brought Mach 10 speed to Mac II computers. At the center of it all is a powerful, easily installed NuBus accelerator board aptly named the Rocket. ● The Rocket is fast: up to three times faster than a Mac IIx, up to six times faster than a regular Mac II, and when matched with a Radius display system, up to 50 times faster with certain applications. ● The Rocket is smart: multiprocessing enables your Mac motherboard to handle all



*The Radius Rocket*

input/output operations while the Rocket's Motorola 68040™ goes to town. ● And the Rocket is powerful: capable of 25 MIPS and 3.6 MFLOPS, the Rocket blows away the Sparcstation 1 and 486 PC's. And with on-board QuickDraw and display-list processing acceleration for color publishing and CAD/CAM, you'll just have to see it to believe it. ● Which you can do by calling us at (800) 227-2795. Then see what it's really like to have the power to be your best.

© 1991 Radius Inc. Radius, the Radius logo, and all Radius products are trademarks of Radius. For the name of a Radius International Distributor, call 1-408-434-1010.

**Circle 40 on reader service card**



# Of the Mac's True Advantage and Other Musings

OUR INTREPID AUTHOR, HAVING WRIT, MOVES ON

T

BY BRUCE F. WEBSTER

his is my last column. Demands at work have been steadily increasing over the past few months, to the point that I can no longer do this forum justice. So I am reluctantly stepping down. But before I surrender the soapbox forever, I'd like

to make a few last observations, not to mention taking the odd potshot at Apple. Here, then, as I see it, is the state of the Macintosh—and Apple.

## I'm Looking through You

Apple's greatest competitive advantage probably lies with the display technology surrounding the Macintosh, especially that developed by third-party companies. The basic Mac concepts—bitmapped displays, a 1:1 screen aspect ratio, screen display that equals hard copy in size, and a virtual desktop extending across or beyond monitors—form a foundation imitated (but seldom equaled) by most other platforms. Twenty-four-bit color, graphics acceleration, video integration and editing, image-manipulation software, and large-screen displays enhance the competitive advantage. Image compression has gone from a nice idea to real hardware in a matter of months. The only systems offering serious competition to Mac display quality and options are the various Next platforms, and they still have a long way to go before they can offer the range of alternatives available for the Mac.

The Macintosh advantage, however, is largely unknown outside of the Mac market. Apple does little to promote these points in its general ad-

vertising and literature. Perhaps Apple's upper-management types are so used to this technology that they don't realize the value of what they have; perhaps they should spend a few weeks working with all the display options (such as they are) for competing systems. (While they're at it, they can ask the engineers to implement block transfers between main memory and the NuBus slots, removing the major roadblock to graphics performance on the Mac.)

## Yes, Virginia, There Is a Low-End Market

The Mac Classic was the surprise hit of the Christmas season, with demand outstripping supply. And according to Apple, over 50 percent of the Classic buyers are first-time Macintosh owners. That's a tremendous success for a new machine, and it vindicates the calls for a low-cost Mac that have been around as long as the Macintosh itself. In fact, the supply crunch makes one wonder how much faith Apple management itself had in the sales potential of the Classic, since it so obviously underestimated the demand.

It's ironic that Apple's position should be strengthened by a machine that has no significant performance advantage over the original Macintosh



released seven years ago. It's as though IBM were to have a big success with an MS-DOS system based on a 4.77MHz 8086 CPU. It makes you wonder what might have happened if Apple had released such a system two or three years ago. But that's water under the bridge, and I congratulate Apple on the success the company has achieved with the Mac Classic.

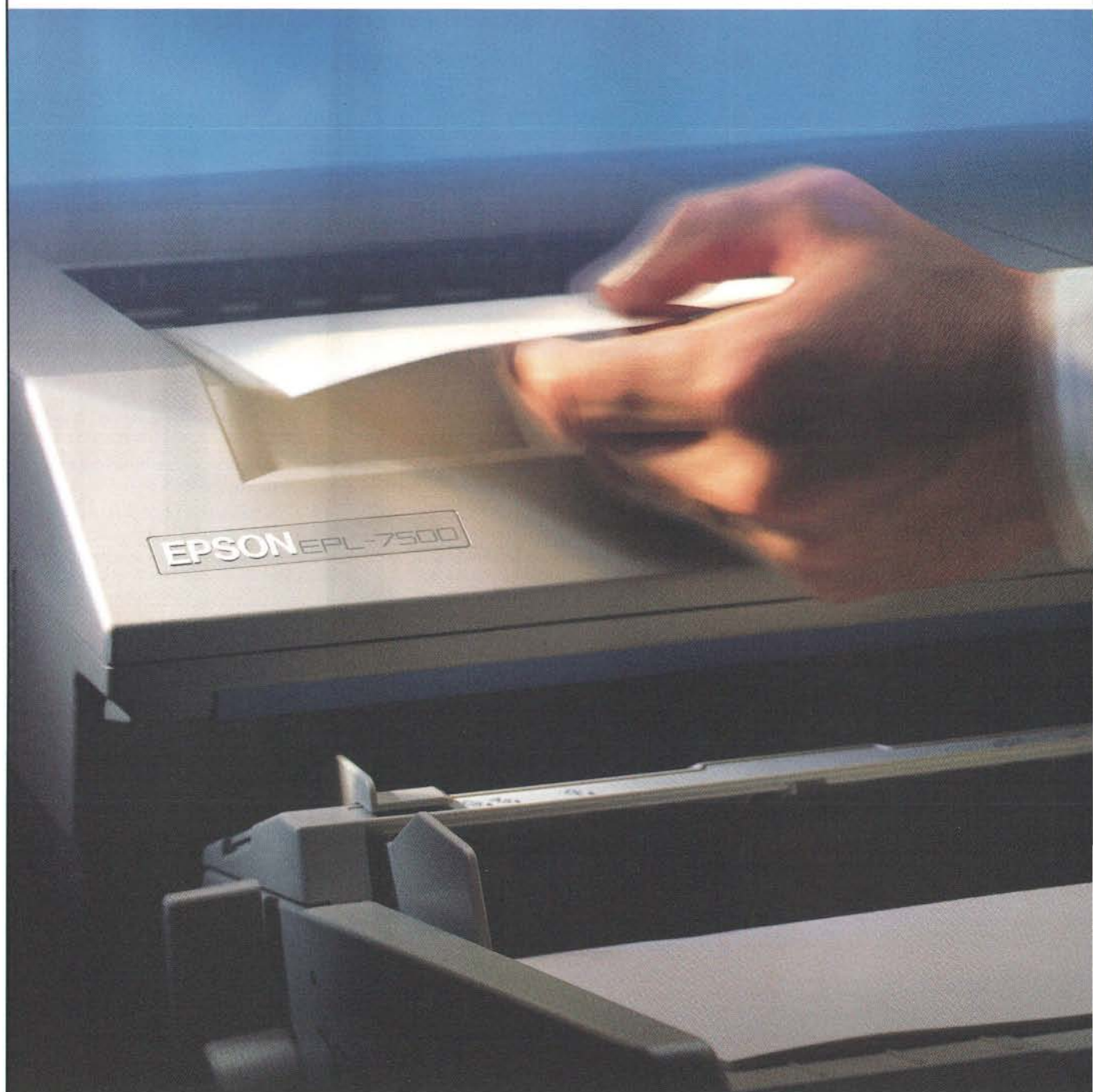
The jury is still out on the Macintosh LC. However, the combination of color, functionality, and Apple IIe compatibility makes the LC an ideal home Macintosh. And while it's not as cheap as the Classic, it's still within striking distance of a lot of budgets.

## Power to the People

The Macintosh IIsi, on the other hand, is off to a rocky start. Complaints about the power supply have already surfaced; apparently the machine's not capable of handling some third-party NuBus boards. (What is it with Apple and power supplies? Has anyone at *(continues)*)



# Epson introduces advance in Post



Adobe and PostScript are registered trademarks of Adobe Systems, Inc. AppleTalk and Macintosh are registered trademarks of Apple Computer, Inc.



# ...es a truly rapid PostScript printing.

## The new Epson EPL-7500 for Macintosh.

All it took was a little RISC.

Introducing the Epson® EPL-7500 laser printer. One of the first true Adobe® PostScript® laser printers designed around a lightning-fast RISC processor.

The result is *significantly* faster output.

It is also significantly better.

Thanks to true Adobe PostScript—not a clone—the EPL-7500 is able to produce razor-sharp text in 35 scalable fonts, plus equally impeccable graphics. Blacks are blacker and lines are finer, courtesy of the printer's unique MicroArt Printing technology.

All of which makes the EPL-7500 extremely well-suited for the most demanding desktop

publishing applications.

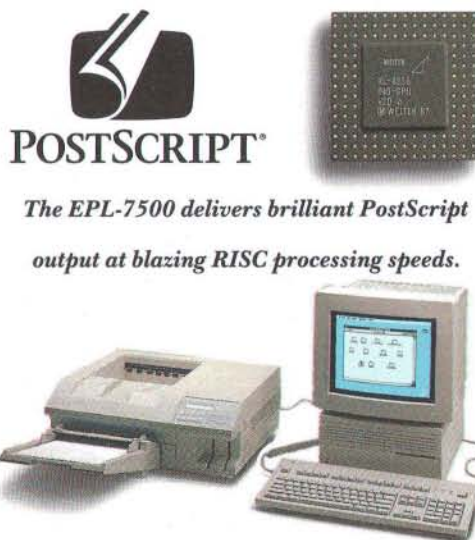
The EPL-7500 handles paper as well as it handles text and graphics. A 250-sheet tray comes standard, a second is optional. Also standard are AppleTalk®, parallel and serial interfaces, allowing the printer to work easily in both Macintosh® and PC environments.

With the EPL-7500, the engineers of Epson have succeeded in raising the standards of laser printing

for Macintosh, without raising the price.

But rather than take our word for it, compare for yourself. Chances are, you will come to the same conclusion.

Very, very rapidly.



Engineered For The Way You Work™

EPSON



Apple considered spending a few extra bucks and putting in a better-than-required power unit? And why does the company always stonewall when things go wrong?) Some have wondered if the IIsi's price is too high, given the limited expandability and lack of a standard floating-point unit (which costs \$200 extra).

Personally, I can't see spending \$5000 for a Mac IIsi system (20MHz 68030/68882, 2MB RAM, 40MB hard drive, 640 by 480 color monitor), when for the same price I can buy a Nextstation (25MHz 68040/56001, 8MB RAM, 105MB hard drive, 1132 by 820 gray-scale monitor, Ethernet, bundled software, and so on). If I needed a Mac, I'd spend the extra bucks and get a Mac IIfx—or, better yet, get a used Mac IIfx.

Speaking of which, I *still* think that killing off the Mac IIfx was one of the stupidest moves Apple has made in the history of the Macintosh product line. The IIfx was simple, clean, reliable, and well designed—more than can be said for some of the current Mac models, which are a bit too clever for their own good. If Apple is really serious about challenging the PC stranglehold on the corporate market, the company should resurrect the IIfx and put the basic box—4MB of RAM and an 80MB hard drive, no built-in display, no monitor, no keyboard—out on the market for \$2495. A 1MB, no-hard-drive version should be available for \$1795, letting dealers configure it with third-party products, just as they do with the PC clones.

At those prices, Apple's margin should be at least the same as for the Mac Classic, if not greater. And, unlike the Classic, LC, or even IIsi, the Mac IIfx would (and did) create a tremendous aftermarket for Apple and third-party hardware developers. More important for Apple's customers, the Mac IIfx isn't the dead end that the Mac Classic is. Face it: the Classic is a modern version of a seven-year-old computer, with too small a screen, too slow a CPU, no floating-point processor, and no significant expansion capability. The Mac IIfx can at least do a decent job of running System 7.0, handling number-intensive tasks, and supporting large-screen, 24-bit displays.

In short, I think the Classic will continue to do well, but I suspect it will mostly go into homes, schools, and small businesses. I can't see heavy corporate purchases of Classics; the systems are just too limited and will be quickly outdated. On the other hand, a nascent Mac IIfx, aggressively priced, could make serious inroads into corporate America. I think the IIfx would do better in the long run, but that's up to Apple to decide.

### The Power of Balance

A year of doing this column has led me to believe that the Macintosh is one of the best-kept secrets in the personal computer marketplace. I've spent the last week watching my office companion, Deirdre, attempt to network three PCs and get a send/receive fax board working in the network server. The process has been anything but transparent. There have been conflicts between windowing and networking software, between fax hardware and the server's logic board, and between networking and fax software and hardware. There are two different windowing systems on the PCs (Windows 3.0 and PC/GEOS), but there are few applications available that run under either one. The result: We tend to avoid doing any serious work on the PCs; their main function to date is for playing solitaire during lunch or long recomputations.

By contrast, Mac hardware and software, including that provided by third-party vendors, tends to integrate well. You plug in a board and/or a cable, drop an INIT or cdev into the System Folder, restart, and that's usually it. You hook up two monitors—one monochrome, the other, 24-bit color—and find you can stretch a window across the two displays. There are the occasional exceptions, where problems of one kind or another arise, but those are just that—exceptions.

On top of that, the Macintosh is probably the most well rounded computer system around. Pick any given aspect of a system—display, sound, user interface, applications, networking, mass storage, performance—and you'll find the Macintosh either competes or excels in that area. And though there may be a superior solution on another platform for any par-

ticular aspect, you won't find another system that comes close to the Mac's overall balance and ease of integration.

Does Apple promote these strengths in its advertising? For the most part, no. Frankly, Apple's advertising—especially in print—has been in decline for the past few years, although some of the TV commercials show a bit of the old flash. Even so, the sum total of Apple's head-to-head competition can be summed up as, "People like to use Macintoshes more than PCs." That's nice, and largely true, but it's hardly a compelling reason for a corporate manager to risk her (or his) job, abandon the de facto PC standard, and install Macs.

A better (and still accurate) theme would be: "People spend less time and money installing, configuring, learning to use, and supporting Mac-based systems than PCs." Apple might use a Macintosh Challenge theme: randomly selected individuals attempt to perform the same tasks on both a Mac and a PC. Those tasks could include installing and configuring the operating system/user interface, setting up a network, hooking up two (or more) monitors to a single system, or cutting and pasting elements from various applications into a single document. Time-lapse photography could show the actual work; the individuals could talk about it afterwards. In short, Apple should promote the Mac's real strengths (balance, integration, ease of use), rather than its hoped-for qualities (popularity, low cost).

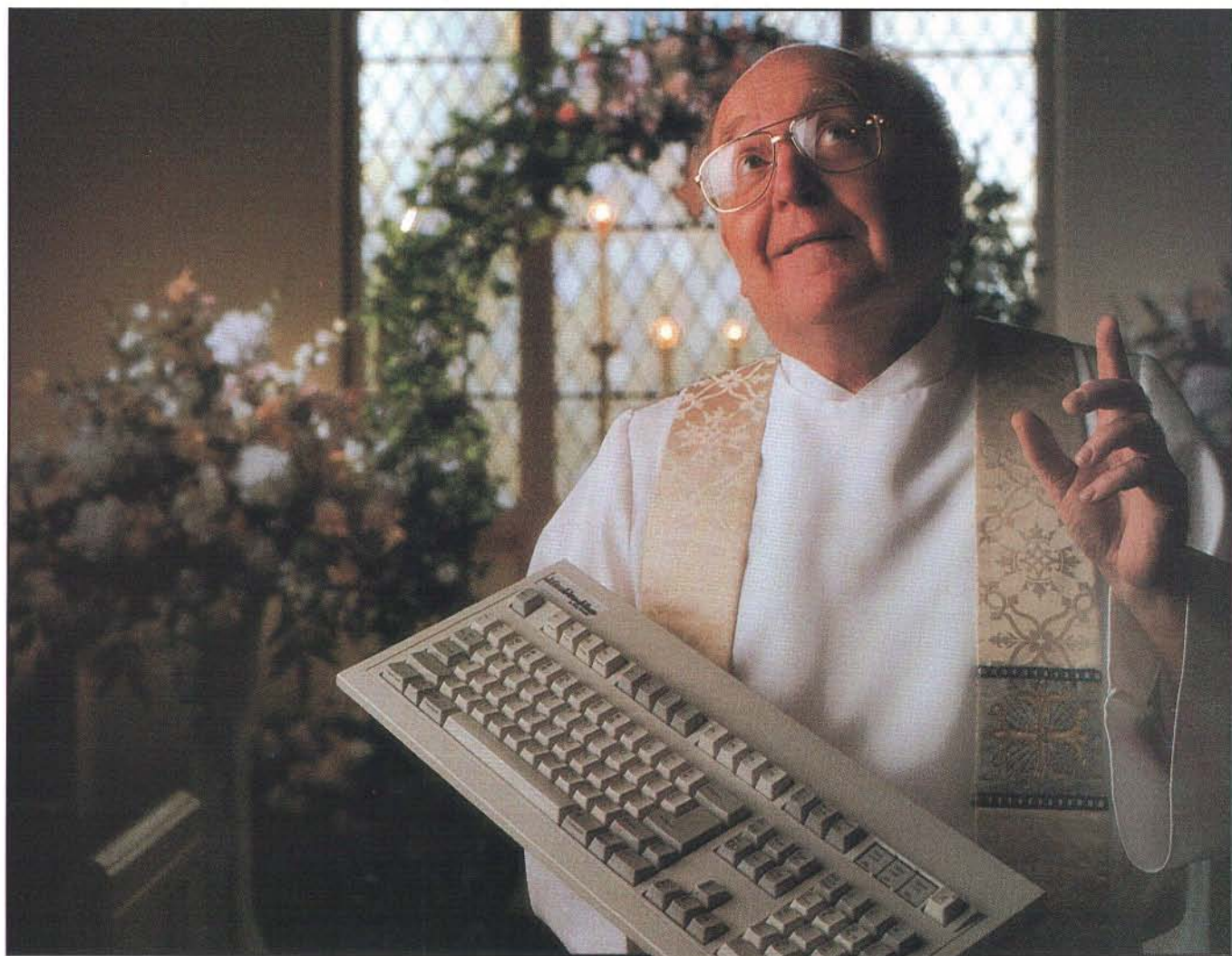
### Life below the Thermocline

In large bodies of water, temperature-based layers can form. For example, a warm layer of surface water often rests atop a much colder layer, each with its own circulation pattern. The boundary between two such layers is called a *thermocline*, and it's very real, if invisible, with the temperature dropping several degrees in the space of a few feet. There is relatively little mixing between the layers, except for debris, fish droppings, and dead (or dying) creatures drifting down from above. Even nonmicroscopic creatures tend to stay in one layer or the other.

This image comes to mind because of the experience I had work-

(continues)





## 'Til Death Do You Part.

In an unprecedented move, Key Tronic Corporation introduces the first limited "lifetime warranty" for our new MacPro Plus™ keyboard!

We're so sure of the reliability, so proud of the quality and so committed to customer satisfaction that we've decided to put our product on the ultimate line. If your MacPro Plus should quit working before you do — and it's our fault — we will repair or replace it. Free!\*

Warranties are important — but so are product features. The MacPro Plus is compatible with all Macintosh® computers. The

105-key layout offers productivity features such as interchangeable Caps Lock and Ctrl keys, period/comma lock capability, adjustable key feel and dual legend keycaps to provide easier, more efficient use of your Mac.

If that's not reason enough to use a MacPro Plus, we'll throw in a free copy of Tempo II™, a macro package from Affinity Microsystems (\$149.00 suggested retail price), and the connecting cable you need for your Mac (\$14.95 suggested retail price), just for the asking. This means you get a \$368 value in a

\$179.00 keyboard, plus a warranty against manufacturer defects that lasts a lifetime.

All you have to do is ask for the Key Tronic® MacPro Plus — the first and last word in keyboard performance, value and reliability!

Call us for more information at 1-800-262-6006. In Canada, call 1-800-348-6006 or outside the U.S.A. call 509-927-5515.

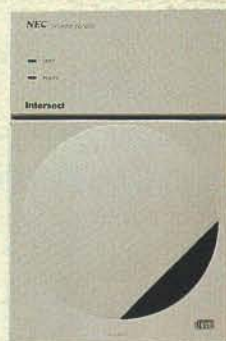
\*So long as the original purchaser owns the product. Some additional conditions apply. See full text of warranty.



Circle 289 on reader service card

 **Key Tronic®**



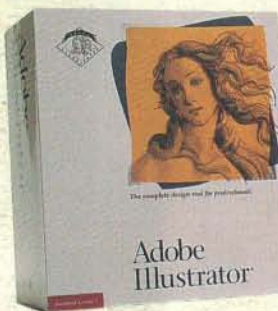


## NEC CD-Rom and Type Gallery

Now you can buy the Adobe Type Library from NEC for an unbelievably low price. You'll get NEC's Type Gallery PS Locked Version and the amazing NEC Intersect CDR-36 CD-ROM reader. You can choose any three typeface families (up to a maximum of 15 individual typefaces) from nearly

all 200 of the Adobe volumes. Plus, you'll save an average of 46% every time you call NEC in the future to unlock additional families.

**CD-ROM and Type Gallery ..... \$449**



## Adobe Illustrator 3.0

Adobe Illustrator 3.0 is the premier product for single page design on the Macintosh. Adobe Illustrator 3.0 offers the highest quality design and illustration capabilities and now includes a powerful new text handling tool allowing for direct, on-screen entering and manipulation of text. Users can create and edit charts and graphs with ease while using new interactive dialog boxes for faster access to features. If this is not enough, every copy of Adobe Illustrator 3.0 comes with Adobe Type Manager. Voted Product of the Year in InfoWorld.

**Adobe Illustrator 3.0 ..... \$348**

## DRAFTING & CAD

### Abracadabra

Design Your Own Home

Architect ..... 64.  
Home Interiors ..... 64.  
Home Landscape ..... 64.

### Clarix

Clarix CAD 2.0 ..... 648.  
MacDraw II 1.1 ..... 288.

### Generic Software

Generic Cadd Level 1 ..... 83.

### Generic Software

Generic Cadd Macintosh ..... 374.

### Graphsoft

Blueprint 2.0 ..... 218.  
MiniCad Plus 3.0 ..... 594.

### Innovative Data Design

Dreams ..... 348.  
MacDraft 2.1 ..... 278.

### Versa Cad

Drafter ..... 525.



## Media Lab PictureLink

PictureLink imports real-world full-color images (photos, artwork, 3D objects, anything!) into your database using a variety of methods. Scan into PictureLink directly from black and white or color scanners. Even grab real-world images in real-time from video sources such as cable TV, video camera, or other instruments. Use PictureLink to catalog images and data together for database applications where identification, documentation, and cataloging are essential. PictureLink "plugs into" 4th

DIMENSION, resulting in seamless integration of real-world pictures within the database environment and greatly reduces the time required for importing and editing images into database records.

**PictureLink 1.0 ..... \$215**

# Our commitment:

## Fonts & Clip Art

### 3G Graphics

Images w/Impact  
Accents and Borders ..... 64.  
Business ..... 64.  
Graphics & Symbols ..... 49.

### Adobe Systems Inc.

The Mac Zone carries the entire

Adobe font library call for prices.

Adobe Plus Pack ..... 108.  
Adobe Type Reunion ..... 37.  
Adobe Type Set 1 or 2 ..... ea 57.  
Adobe Type Set 3 ..... 115.  
Smart Art 1 thru 4 ..... 58.  
Type on Call ..... 65.

### Ares Software Corp.

Font Monger ..... 62.

### Dream Maker

MacGallery (HyperCard) ..... 26.  
MacGallery (MacPaint) ..... 26.  
Clippures: Business Vol 1 ..... 68.  
Clippures: Business Vol 2 ..... 68.  
Clippures: Sports Vol 3 ..... 68.

### T/Maker

Click Art  
Business Cartoons ..... 31.  
Business Images ..... 31.  
Christian Images ..... 38.  
Personal Graphics ..... 31.  
EPS Animals And Nature ..... 82.  
EPS Business Art ..... 82.  
EPS Illustrations ..... 82.

## Graphics and Design

### Adobe Systems Inc

Type Align ..... 58.  
Illustrator 3.0 w/ ATM ..... 348.  
Type Manager 2.0 ..... 54.  
Photo Shop ..... 498.  
Streamline 2.0 ..... 118.

### Aldus

Freehand 3.0 ..... 405.  
PageMaker 4.0 ..... 498.  
Digital Darkroom 2.0 ..... 258.  
Personal Press 1.0 ..... 198.  
Super 3D 2.1 ..... 338.  
SuperPaint 2.0 ..... 134.

### Altsys

Art Importer 2.0 ..... 88.  
Fontographer 3.2 ..... 264.

### Broderbund

Kid Pix ..... 31.  
BannerMania ..... 36.  
Print Shop ..... 34.  
TypeStyler 1.5 ..... 114.

### CE Software

Amazing Paint ..... 64.  
Calendar Maker 3.0 ..... 30.

### Clarix

MacPaint II 2.0 ..... 91.  
SmartForm Designer ..... 288.

### Deneba

Canvas 2.1 ..... 188.  
UltraPaint ..... 124.

### Dynaware USA, Inc

DynaPerspective 2.0 ..... 599.

### Electronic Arts

Studio 8 2.0 ..... 188.  
Studio 32 ..... 448.

### Frame Technology Corp

Frame Maker ..... 795.

### Koala Technologies Corp.

Mac Vision ..... 258.

### Letraset Graphic Design

ColorStudio ..... 648.  
ImageStudio ..... 138.  
ReadySetGo! 4.5 ..... 164.

### Mainstay

Capture 3.0 ..... 44.

### NEC

Intersect CDR-36 Type Gallery  
PS Bundle ..... 449.  
Type Gallery PS, Photo Gallery  
or Image Gallery ..... ea.245.

### Olduvai

Video Paint ..... 278.

### Paracomp

Draw Tools ..... 58.  
Model Shop ..... 374.  
Swivel 3D 1.1 ..... 294.  
Swivel 3D Professional ..... 438.  
Swivel Art 3D ..... 81.

### Pixar

MacRenderman ..... 630.  
Showplace ..... 468.

### Preferred Publishers

Exposure Pro ..... 68.  
Master Color ..... 98.  
MasterPaint 1.0 ..... 49.

### Quark Inc.

Quark Xpress 3.0 ..... 518.  
QuarkStyle ..... 188.

### Salient

Partner 1.01 ..... 55.

### Softview

if-X Forms Designer 1.0 ..... 168.

### Solutions

Curator ..... 86.

### SuperMac Technology

PixelPaint 2.1 ..... 148.  
PixelPaint Pro 2.0 ..... 464.

### Timeworks

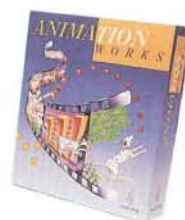
Publish It Easy 2.0 ..... 144.

### Ventura Software

Ventura Publisher for Mac ..... 584.

### Zedcor, Inc.

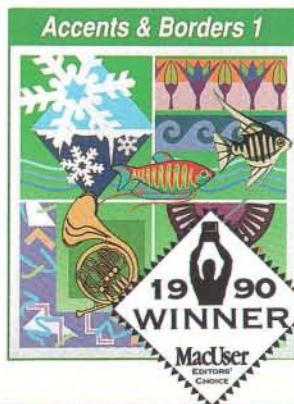
DeskPaint/ Draw 3.0.3 ..... 114.



## Gold Disk Animation Works

Animation Works is a 1 to 8 bit, easy-to-use, path-based animation program. Objects are created in the CEL editor and then animated over static or scrolling backgrounds in the Movie Editor. Also available is the ability to add sounds, color cycling, multiple palettes, and looping control.

**AnimationWorks ..... \$122**



## 3G Graphics Accents & Borders 1

The numerous borders, ornaments, labels, and symbols in Accents and Borders are crisp black & white and finely crafted. Unlike most clip-art offerings, all 3G images are opaque and most are strategically subgrouped for easy separation. Bonus color disk for registered users.

**Accents & Borders 1 ..... \$64**



# The Mac Zone

Established 1986

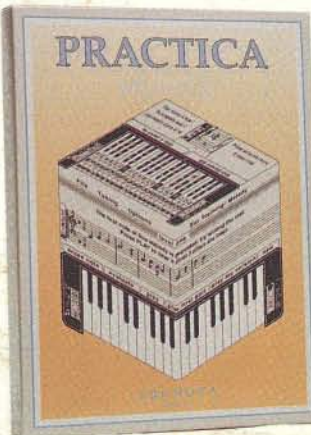
# Over 1600 products for your Mac



## ResumExpert

Advance your career with professional help. ResumExpert creates job-winning resumes for students to CEO's. Designed by a resume-writing pro, the ResumExpert Software Series is an impressive collection of eye-catching resume and cover letter templates for Microsoft Word 3.0 or 4.0 and WriteNow 2.2. Each of the 10 editions provides over 40 distinctive and completely-formatted layouts. Easy to use - just select the appropriate template and replace the text with your own information. The highly-rated manuals provide expert tips for composing professional-quality resumes and cover letters quickly. MacUser rated ResumExpert a 1989 Top 200 Software Product and awarded it 4 mice!

**ResumExpert ..... \$47**



## Ars Nova Practica Musica 2.2

Practica Musica 2.2 teaches you how to identify by ear two types of musical sounds, intervals, and chords. Version 2.2 now offers training for seventh chords and their inversion, plus advanced lessons in ninth, eleventh, and thirteenth chords. It also teaches the elements of music theory related to intervals and chords. Your Mac serves as the ever-patient drill instructor. It plans either through the Mac's sound chip, or any MIDI synthesizer. Includes Windows on Music, a coordinated music fundamentals toolbox.

**Practica Musica 2.02 ..... \$68**

## EDUCATION

### Addison-Wesley

Inside Mac Vol 1 - 5 ..... 18.  
Inside Mac X-ref ..... 8.  
MacProgramming Primer ..... 21.  
MacProgramming Secrets ..... 19.  
Programmers Online Companion 2 ..... 35.

### Bantam-Double Day-Dell

Illustrator Design Hndbk ..... 22.  
HyperCard Handbook 2.0 ..... 21.  
Mastering WingZ ..... 17.

### Bible Research

The Word Processor 5.0 NIV, KJV, NKJ, RSV ..... 145.

### Bright Star

Alphabet Blocks 1.10 ..... 29.  
Talking Tiles 1.0.2 ..... 25.

### Brøderbund

Calculus, Geometry, Physics 57.  
Type! ..... 17.

### Carina Software

Voyager 1.2 ..... 87.

### Davidson & Associates

Alge Blaster Algebra Plus ..... 35.  
Math Blaster Mystery ..... 29.

### Earthquest, Inc.

Earthquest (HyperStack) ..... 48.

### Goldstein & Blair

Mac Bible/What Do I Do/Sof ..... 33.  
Mac Bible + What Do I Do ..... 27.  
Macintosh Bible 3rd Ed. .... 19.

### Great Wave

KidsMath/Kids Time ..... ea. 25.  
NumberMaze B&W ..... ea. 25.

### Hyperglot Software Co.

Spanish, French, German, Italian, Russian  
Word Torture ..... ea. 28.  
Spanish, French, German Pronunciation Tutor ..... ea. 34.  
Verb Tutor ..... ea. 38.  
Spanish, French Tense Tutor ..... ea. 38.  
Intro to Russian ..... 28.  
Russian Verbal Aspects ..... 41.  
Russian Noun Tutor ..... 58.  
Japanese Easy Kana ..... 128.  
Japanese Karji Master ..... 104.

### Individual Software

Training for PageMaker 4.0 ..... 29.  
Professor Mac ..... 29.

### Individual Software

Typing Encore 3.5 ..... 17.

### Learning Company

Math Rabbit ..... 30.  
Reader Rabbit 2.2 ..... 30.

### Nordic Software

MacKids Preschool pack ..... 35.  
Turbo Math Facts ..... 21.  
Word Quest ..... 30.

### Penton Overseas -Vocabulaire

French 1 or 2 ..... 35.  
German 1 or 2 ..... 35.  
Italian 1 or 2 ..... 35.  
Japanese 1 or 2 ..... 35.  
Spanish 1 or 2 ..... 35.

### Personal Training Systems

Tutorials for:  
HyperCard 2.0 ..... 51.  
FileMaker Pro ..... 51.  
QuarkXPress 3.0 ..... 51.  
PageMaker 4.0 ..... 51.  
Freehand ..... 51.  
Persuasion ..... 51.

### Personal Training Systems

Excel ..... 51.  
Word ..... 51.  
Works ..... 51.  
Mac Basics ..... 51.

### Simon and Schuster

Typing Tutor IV ..... 28.

### The Software Toolworks

Mavis Beacon Teaches Typing ..... 31.

### True Basic

Algebra ..... 39.  
Arithmetic ..... 39.  
Discrete Mathematics ..... 39.  
Pre Calculus / Trigonometry ..... 39.  
Probability Theory ..... 39.  
True Basic Calculus 3.02 ..... 39.  
Truostat ..... 39.

### Visionary Software

Synchronicity ..... 38.

### Zondervan

mac Bible NIV, KJV, RSV ..... 58.  
mac Bible Greek, Hebrew ..... 98.

## HYPERWARE & CD'S

### Activision

Cosmic Osmo CD ROM ..... 45.  
Manhole CD ROM ..... 33.

### Aldus/Silicon Beach

Super Card 1.5 ..... 198.

### Claris

HyperCard 2.0 Dev. Kit ..... 139.  
Multimedia CD ROM ..... 318.

### Farallon - Media Tracks

Hyperglot Software Co.  
Learn to Speak Spanish ..... 60.  
Learn to Speak French ..... 60.

### HyperPress Publishing

Icon Factory 1.1 ..... 44.  
Script Expert 1.0 ..... 44.  
Script Library 2.0 ..... 56.

### ICOM Simulations

Hypertmon ..... 57.

### Individual Software

Power Macros/HyperCard ..... 34.

### Microsoft Corporation

Office CD ROM ..... 598.

### Motion Works

ADDMotion ..... 182.

### QLTech (Quantum Leap)

Macademia CD-ROM ..... 73.  
Giga-Rom CD-ROM ..... 98.  
CD7 CD-ROM ..... 49.

### Somak

Script Edit ..... 43.

### Wayzata Technology Inc.

Middle East Diary ..... 85.  
All Of Mac Tutor ..... 155.  
Baseball Guide & Reg ..... 155.  
CD Funhouse ..... 39.  
Disc Tracy Prog Detec ..... 85.  
GEM (Public Domain) ..... 78.  
Quick Art ..... 174.  
Seals Of The US Govt. .... 55.  
The CIA World Factbook ..... 78.  
The USA Factbook 1990 ..... 85.

## ENTERTAINMENT

### Accolade

Ishido: Way Of Stones ..... 32.  
Stratego ..... 29.

### Brøderbund

Sim Earth ..... 39.  
SimCity Color ..... 46.  
The Playroom ..... 28.  
Carmen San Diego? ..... ea. 28.

### Electronic Arts

Starflight ..... 39.  
Weaver Baseball 1.5 ..... 33.

### FTL Games/Software Heaven

oids ..... 29.

### Inline Design

Darwin's Dilemma ..... 31.  
Tesseract ..... 32.

### Lucasfilm Games

Indiana Jones - Last Crusade 33.

### Sphere - Spectrum Holobyte

Faces... Tris III ..... 20.  
Tetris (B&W And Color) ..... 20.



## MULTI-MEDIA

### Apps

DigiVideo - B&W ..... 348.  
Micro TV ..... 250.

### Bright Star

Hyper Animator 1.5.2 ..... 97.  
Interface ..... 248.

### Farallon

Multimedia Pack ..... 318.

### Gold Disk

Animation Works ..... 122.

### MASS Microsystems

QuickImage 24 ..... 748

### Digital Vision

Computer Eyes - Color ..... 348.  
ComputerEyes - B/W ..... 194.

### MacroMind

MacroMind Accelerator ..... 124.  
MacroMind Director 2.0 ..... 437.  
MacroMind Media Maker ..... 325.

### Paracomp

Film Maker ..... 438.

### Raster Ops

ColorBoards 364 w/Director 2.0 ..... 1,295.

## QLTech Giga-Rom, Macademic, or CD7

Giga-Rom is the largest collection of Macintosh software ever assembled. Files are archived in Bill Goodman's "Compactor" format and indexed with On Location. Macademic is 7,500 programs and related files for Education and Instructional use. Subjects range from the arts to the sciences. CD7 is The largest non-compressed collection of Macintosh software. Over 15,800 files including art, games, demo, and music files with digitized sounds.

**Giga-Rom ..... \$98**  
**Macademic ..... \$73**  
**CD7 ..... \$49**



# No gimmicks or hidden charges

## ACCELERATORS & UPGRADE BOARDS

<b>Applied Engineering</b>	<b>DayStar Digital</b>
asic 1Mb Upgrade ..... 118.	Fast Cache IIci ..... 278.
table Upgrade	Powercard 030 w/o Co Processor
1Mb SRAM ..... 385.	25mhz II, Iix, Ilcx ..... 1,095.
adralink ..... 204.	33mhz II, Iix, Ilcx ..... 1,240.
<b>Connectix Corporation</b>	40mhz II, Iix, Ilcx ..... 1,389.
tual - SE/30 Iix, Ilcx, Ilci 114.	50mhz II, Iix, Ilcx ..... 1,895.
tual Mac II w/PMU ..... 184.	
<b>Star Digital</b>	<b>Dove Computer Corp</b>
verCache 030 IIci	MacSnap Upgrades
mhz w/o FPU ..... 948.	524XE (512KE to 1Mb) ..... 195.
mhz w/FPU ..... 1,165.	524XS (524XE w/SCSI) ..... 260.
mhz w/o FPU ..... 1,688.	Marathon 030 Upgrades -
mhz w/FPU ..... 1,950.	Bundled with Virtual ..... 528.



### rangeMicro Orange 386

386 is truly a second computer functioning independently inside yourintosh. The dedicated 16 Mhz Intel 80386sx processor and 1 Mb of board RAM (expandable to 16Mb) assures that your 1 Mb programsute with maximum compatibility. We loaded the Orange 386 withvative features, including two PC/AT bus slots which allow you to addPC cards inside your Macintosh. This capability opens the broad rangeC cards for the Mac.

range 386 ..... \$1695

## STORAGE MEDIA

<b>Sony Corp. Of America</b>
10 Pk DS/DD 800K ..... 12.
10 Pk DS/HD 1.44Mb ..... 19.
50 Pack DS/DD 800K ..... 39.
50 Pk DS/HD 1.44Mb ..... 75.

**FREE**  
**Smac-A-Mac**  
(8 Value) for every  
purchase of \$500 or more

**1-800-248-0800**

**Mon - Fri:** 8am to 1am Eastern Time  
5am to 10pm Pacific Time  
**Sat & Sun** 9am to 9pm Eastern Time  
6am to 6pm Pacific Time



Major credit cards accepted. No surcharge.  
Your credit card is not charged until your order is shipped. If we must ship a partial order, freight is not charged on the back order.  
COD orders are accepted: Limit \$1,000 per order. Cash or bank check accepted. All check or purchase orders must have a phone number in order to be processed. Add \$5 per order.  
Most personal and company checks that are received with order will clear immediately.  
Educational, government and corporate purchase orders are accepted.  
All U.S. shipments insured at no extra charge.  
No sales tax except for WA residents (add 8.2%).  
Prices and product availability subject to change without notice.  
All products covered by 120 day limited warranty.  
Availability guarantee does not apply to unreleased items and monitors.

**Shipping**  
\$3 per order. We ship Airborne Express overnight service. (Some rural areas require an extra day)  
Orders placed by 9 pm EST (6pm PST) weekdays for "in stock" items will ship that day for overnight delivery (barring system failure, etc.).  
APO/FPO/PO box orders shipped 1st class U.S. mail.  
Defective software will be replaced immediately, and hardware will be replaced or repaired at our discretion.  
Most products carry a 30-60 day money-back guarantee. Call 1-800-248-9948 for return authorization number.  
Due to the advanced printing of this advertisement, our prices may change. We are committed to offering low prices and product availability so call for our most current prices.

Customer Service: 1-800-248-9948, Weekdays: 10am-9pm EST, 7am-6pm PST.  
MacZone 18005 NE 68th st., Suite A110 • Redmond, WA 98052 USA

**Outside USA: Canada FAX**  
**(206)883-3088 • 800-248-0344 • (206) 881-3421**

## American Power Conversion UPS 110SE and UPS 370ci

The power to protect your Mac. APC's UPS110SE and UPS370ci not only to provide better line filtering and surge suppression than most surge suppressors, but they also deliver backup power during ACX line failures — giving you enough time to perform a safe shutdown. The UPS 110SE is sized for (and slides right under) a SE, SE/30 or Classics. The UPS370ci fits under your Mac II monitor and is sized to power a Mac ci or fx with a two-page monochrome monitor. APC also offers a complete line of more powerful UPS systems and PowerChute, a UPS monitoring program for AppleShare networks.

**UPS 370ci ..... \$418**  
**UPS 110SE ..... \$208**



## Dove DoveFax Plus

DoveFax Plus offers the most sought-after fax software features such as full background operation when sending or receiving a fax (with or without MultiFinder); automatic answer, which allows you to receive a fax without interruption; redialing, which guarantees fast delivery; pre-scheduled transmissions, that allows you to send

multiple faxes after hours when rates are lower; customized cover sheets and more! With the DoveFax Plus, your Mac turns into a personal voice messaging system, as well as a full-featured fax machine. The DoveFax Desktop can be upgraded to the DoveFax Plus with the simple addition of a microphone and software.

**DoveFax Plus ..... \$395**

## LISI Sales & Marketing Manager

In this world of fast paced markets and even faster paced sales, you must have the marketing software to keep up with the world. Sales and Marketing Manager is a five part program that improves your control of all sales and marketing. It allows you to set up individual companies or divisions. Whether you are one sales person working for many companies or one company with many divisions you can now keep full control.

**Sales & Marketing Manager ..... \$295**



## MODEMS & FAX

<b>Abaton Technology Corp</b>	<b>Dove Computer Corp</b>	<b>Preferred Publishers</b>
InterFax 12/48 Faxmodem . 264.	Dove Fax 24/96 ..... 298.	Double Talk ..... 78.
InterFax 24/96 Faxmodem . 348.	DoveFax Plus ..... 395.	Double Talk Twin Pack ..... 128.
<b>Applied Engineering</b>	<b>Everex Systems</b>	<b>Prometheus</b>
DataLink Mac Internal	EMAC 2400 w/MNP 5 ..... 175.	External Modems
2400 Baud ..... 208.	<b>FreeSoft Co.</b>	2400 Mini ..... 128.
w/ MNP 5 ..... 235.	White Knight 11 ..... 84.	2400 w/ MNP 5 ..... 218.
w/ MNP 5 and SendFax ..... 269.	<b>Global Village</b>	<b>Internal Modem</b>
DataLink Express External	<b>Communications</b>	2400 w/ MNP 5 ..... 245.
2400 Baud ..... 174.	TelePort ADB 2400 MNP 5 . 128.	Tavel Modem ..... 194.
w/ MNP 5 ..... 195.	TelePort ADB SendFAX ..... 184.	<b>ProModem DateFax Series</b>
w/ MNP 5 and SendFax ..... 235.	<b>Hayes</b>	9600M Plus ..... 598.
DataLink LC Internal	Smartcom II 3.1 ..... 83.	24/96 MiniFax ..... 208.
2400 w/ SendFax ..... 245.	<b>Microcom</b>	24/96 Send/Receive Fax ..... 308.
2400 v.42 bis w/ Sendfax .. 265.	Mac Modem V.32 MNP 9 .. 688.	<b>Shiva</b>
<b>CompuServe</b>	<b>Orchid Technology</b>	Netmodem V2400 ..... 350.
Navigator 3.0 ..... 48.	Orchid Fax Modem 96/96 .. 428.	Netmodem V.32 9600 .... 1,165.
Starter Kit ..... 22.		<b>Software Ventures</b>

## PROGRAMMING

<b>Digital</b>	<b>Serius</b>
SmallTalk/Vmac ..... 123.	Communication Objects ..... 64.
<b>Mainstay</b>	<b>Symantec</b>
V.I.P. .... 85.	Think C 4.0 ..... 164.
<b>Microsoft Corporation</b>	Think Pascal 3.0 ..... 164.
Quick Basic 1.0 ..... 63.	Just Enough Pascal ..... 51.
<b>Paragon Concepts</b>	<b>TGS Systems</b>
Qued-M ..... 85.	Prograph 2.0 W/Compiler .. 244.
<b>Serius Corporation</b>	<b>True Basic</b>
Serius Developer ..... 339.	True Basic 2.02 ..... 54.
Serius Programmer ..... 210.	<b>Zedcor, Inc.</b>
Serius Animation Objects .... 64.	ZBasic 5.0 ..... 98.



# just honest business

The Mac  
**Zone**  
Established 1986



## Bible Research Systems THE WORD Processor 5.0

Find any verse in the Bible instantly! Search for any word, or phrase or even for concepts using a built-in Thesaurus. Easily find the exact verse you need. Create your own Bible cross-reference lists that permanently store your personal studies. Print any

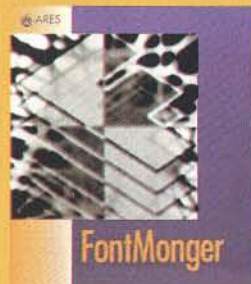
portion of Bible text. Select one of the four Bible Translations (NIV, KJV, NKJ, RSV). 10th Anniversary Edition!

**THE WORD Processor 5.0 ..... \$145**

## ARES Software Corp. FontMonger

FontMonger software converts type formats between PostScript Type 1 (for use in Adobe Type Manager), Type 3 and TrueType (for System 7.0). It also provides complete Adobe Illustrator and Aldus Freehand support for TrueType, since all your converted fonts can be imported or exported as EPS files. You can even generate customized typefaces and characters such as obliques, fractions and small caps or merge characters from different typefaces together to form a new typeface.

**FontMonger ..... \$62**



## NETWORKING & CONNECTIVITY

### Asanté

MacCon SE E or ET .....	275.
MacCon SE/30 E or ET .....	340.
MacCon + II E or ET .....	340.
MacCon + 30i E or ET .....	340.

### Caravelle Networks Corp

Mac To Mac 5 Pack .....	164.
-------------------------	------

### Cayman Systems

Gator Box .....	1,955.
Gator Share Software .....	1,350.
Gator Card E/II (II Series) ..	458.
Gator Mail Q (10 Users) .....	675.

### CE Software

QuickMail 2.2.3 (1-5 User) ..	207.
-------------------------------	------

### DataViz

MacLink Plus PC 4.5 .....	116.
MacLink Translators .....	97.

### Dayna Communications Inc

EtherPrint -T .....	348.
EtherPrint Plus .....	625.
DOS Mounter 2.0 .....	53.

### DayStar Digital

LT 2 MC LocalTalk Board ..	295.
LT 2 PC LocalTalk Board ..	185.

### Fairfield

Clear Access 1.3 .....	406.
------------------------	------

### Farallon

#### Ethernet

Mac II Card .....	398.
SE/30 Card .....	398.
Portable Pak .....	328.
Star Controller EN500 .....	1,588.
PhoneNET Liaison 3.0 .....	258.
PhoneNET Star Cont. EN ..	120.

#### PhoneNET

DIN-8 .....	32.
DIN-8 (10 Pack) .....	197.
DB-9 .....	34.
Liaison 3.0 .....	258.
Star Connector .....	17.
Star Controller 300 .....	824.
Star Connector (10 Pack) ..	125.
PhoneNet To AppleTalk .....	8.

#### Remote Wakeup

Modem Cable .....	31.
Timbuktu 3.1 (30 User) ..	1,284.
Timbuktu 3.1 .....	94.
Timbuktu Remote .....	122.
Access Pack .....	844.

### Insignia Solutions

Access PC .....	61.
Soft PC 1.3 .....	241.
Soft PC EGA/AT .....	124.
Soft PC Classic .....	125.

### International Business

#### Software

DataClub 3 Pack .....	198.
DataClub 10 Pack .....	538.

#### Microcom

Carbon Copy Mac .....	116.
Carbon Copy Twin Pack ....	168.

#### Nuvotech

Nuvolink II .....	271.
Nuvolink SC .....	309.
Turbo Bridge .....	388.

#### Turbo Net

DB-9 .....	19.
DIN-8 .....	19.
DIN-8 (12pk) .....	198.

#### St - DB-9

St - DB-9 .....	29.
St - DIN-8 .....	29.
St 12 Pack DIN-8 .....	278.
Turbo Star .....	815.

#### Shiva

Netbridge .....	405.
Netserial .....	274.

#### Sitka/TOPS

Tops 3.0 Network Mac .....	186.
Flashbox Mac DIN-8 .....	118.
Tops Netprint 2.0 .....	114.

#### Systems Compatibility

Software Bridge Mac .....	78.
---------------------------	-----

## ACCESSORIES

### American Power Conversion

UPS 110SE .....	208.
UPS 370ci .....	418.

### CoStar

Label Writer .....	184.
Organizer .....	198.
Organizer Jr .....	78.

### Ergotron

Mac Tilt Classic .....	67.
Mac Tilt Platinum Plus .....	67.
Mac Tilt SE .....	67.

### Farallon

Voice Digitizer .....	88.
Sound System 2.02 .....	158.

### Go Technology

Hot Keys .....	39.
----------------	-----

### I/O Design

#### Black or Blue

Imagewriter II Bag .....	48.
Mac Luggage Classic/SE .....	64.
Mac Luggage II/IIx .....	98.
Mac Luggage IIcx/ci/s .....	84.
Mac Luggage SE Ext. ....	74.

Ultimate Classic Std .....	68.
Ultimate SE .....	78.
Ultimate SE Neon Colors ..	88.

### Kensington

Antiglare Filter 13" Apple ..	62.
Mac II Mon. Cable Ext. Kit ..	32.
Mac II Stand (No Cables) ..	19.
Mac II Monitor Stand .....	64.
Mac IIcx Monitor Stand .....	54.

### Kensington

Masterpiece Mac II .....	105.
Pass Proof .....	69.

### Polarizing Filter

SE Anti Glare/Rad. Filter ..	32.
Super Base .....	31.

### System Saver Mac

System Saver SE .....	52.
Tilt Swivel For SE or SE/30 ..	21.
X-Long ADB Keyb. Cable ..	24.

### Apple Security Kit System

Power Backer 360 .....	269.
Power Tree 10 .....	19.
Power Tree 20 .....	27.
Power Tree 50 .....	54.

### PLI

PLI Case Infinity Turbo 40 ..	60.
-------------------------------	-----

### Smack A Mac

#### Covers

13" Mon. & Ext Keyboard ....	18.
SE/Plus Ext. Keyboard .....	17.
SE/Plus Std. Keyboard .....	17.
Smack A Mac Stuffed Mac ....	8.

#### Toner Cartridge

II NTX .....	104.
LaserWriter Plus .....	89.

#### Targus Bags

Cx/Ci Black .....	74.
Mac/SE Reg. Black .....	54.
Mac/SE Xtb Blk. Gry. Wine ..	68.
Imagewriter Bag Blk or Blu ..	45.



## Animas

### True-Color Hand Scanner

Animas is proud to present its True-Color Hand Scanner as the definitive answer to your desktop publishing. The AS-C105 is invincible; fully equipped with ColorScan MacCheese software which provides you with great flexibility and compatibility to paint, edit and save in the universal PICT format.

**True-Color Hand Scanner ..\$575**



## CompuServe

### Membership Kit

CompuServe is the largest on-line service, with over 500,000 users. Services include electronic mail, bulletin boards, special interest groups (Forums), and a discount department store. You can chat with other users in the CB mode, or check out the latest rumors in the gossip column. Databases include the complete text from major newspapers and encyclopedias, plus stock data weather forecasts and book and movie reviews.

## CompuServe

**Membership Kit .....\$22**

## Basic Needs Inc. Nylon Dust Covers

Basic Needs Nylon Dust Covers protect your computer and printer against dust and spills. They look great because they are machine-stitched and custom-fitted to your equipment. The platinum colored covers are made of washable, rip-stop nylon which is anti-static and won't crack, yellow or fade like similar priced vinyl.

**Nylon Dust Covers ..... from \$12**

**Hard Top Keyboard Covers .....\$15**

**Utility Pack .....\$15**





# Airborne Express shipping only \$3 per order

## AISB

### How to Write a Business Plan

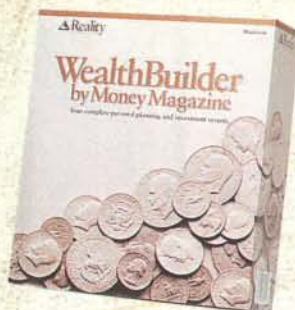
The one software package that provides you with a complete, written, business plan. Includes entire narrative plus all financials and spreadsheets. Makes the preparation and writing of your plan as easy as ABC. This package prepares your projected three year profit and loss, balance sheet and cash flow statements. How to Write a Business Plan also provides you with all of your business plan's written sections including marketing, products and R&D.

**How to Write a Business Plan ..... \$85**

## Reality Technologies WealthBuilder

Calculate your net worth by using templates to create a personal profile balance sheet and budget summary. If you use Quicken, Andrew Tobias, Manage Your Money or Mac Money you can import data directly. Establish realistic financial goals, objectives and then take action!

**WealthBuilder ..... \$144**



## ADOBE TYPE-ON-CALL

### Now Shipping



## Newton Technology, Inc. GEOvista™

GEOvista, a Geographic Presentation System for the Macintosh, displays data on presentation quality maps. Information can be imported from other applications or entered directly from the keyboard. Areas of the map are shaded to represent data ranges selected by the user. Included with GEOvista are 52 template maps, one for each of the 50 states, subdivided by county, and 2 maps of the U.S. subdivided by state.

**GEOvista ..... \$169**

## Personal Training Systems

Personal Training Systems Courses are just like having your own private tutor. The courses are interactive, which means you work on your Macintosh using the real program as the instructors talk you through step-by-step. These audio-based courses are self paced

and modular, allowing the learner to receive training at the most suitable level - beginning, intermediate, or advanced. Each course module is reusable, takes about 90 minutes to complete, and includes an audio cassette, example files on disk, and a quick reference card. The MacZone carries the complete line of Personal Training Systems programs. All Personal Training Systems Courses are unconditionally guaranteed.

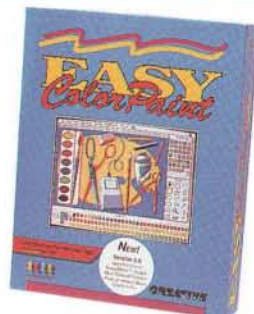
**Personal Training Systems ..... ea \$51**



## Creative Software Easy Color Paint 2.0

Easy Color Paint 2.0 will bring many colorful and fun-filled hours to your Macintosh LC or any Macintosh II. It's suitable for all levels of users: window locking for beginners, fancy menu options and a pressure-sensitive pen for pros. Print your masterpiece in color to the ImageWriter II or any Color QuickDraw printer. No wonder it's a Finalist for "Best Personal Creativity Program" in this year's Software Publishers awards. See for yourself what all the excitement is about.

**Easy Color Paint 2.0 ..... \$44**



## Global Village TelePort

TelePort plugs into your ADB connector, like your mouse and keyboard, eliminating a power adaptor, freeing your serial ports, and enhancing portability. TelePort 2400 baud Hayes compatible modem incorporated MNP5 data compression/error correction.

**Teleport.....\$128  
w/ Send Fax....\$184**



## WORD PROCESSING

### A Lasting Impression

Resume Expert ..... 47.  
Cover Letters ..... 47.

### Ashton Tate

Full Write Pro 1.5 ..... 145.

### Baseline Publishing

Thunder 7 ..... 56.

### Caere Corporation

Omnipage 2.1 ..... 494.

The Typist ..... 478.

### Claris

MacWrite II 1.1 ..... 141.

### Delta Point

Taste ..... 83.

### Lifetree Software Inc.

Correct Grammar 2.0 ..... 55.

### Microsoft Corporation

Word 4.0 ..... 244.

### Paragon Concepts

Nisus 3.01 ..... 244.

### Personal Bibliographic

ProCite ..... 195.

### Petroglyph Inc.

Editorial Advisor ..... 92.

### Preferred Publishers

Vantage 1.5 ..... 50.

### Reference Software

Grammatik Mac 2.0 ..... 49.

### SNA

Stylist ..... 45.

### T/Maker

WriteNow 2.2 ..... 116.

### WordPerfect Corporation

WordPerfect 2.0 ..... 228.

## ACCOUNTING & FINANCE

### Aatrix

Ultimate Payroll 4.0 ..... 188.

Checkwriter II 3.0 ..... 31.

Payroll 3.5 ..... 108.

### Absolute Solutions

Computerized Classic Acctg224.

### ACIUS

4th Dimension 2.1 ..... 488.

FileForce 1.0.1 ..... 248.

### AEC Management Systems

FastTrack Schedule 1.5 ..... 138.

### After Hours Software

Touch Base ..... 85.

### Checkmark Software

MultiLedger 1.3 ..... 234.

Payroll 4.5 (MultiLedger) .. 174.

Cash Ledger ..... 114.

### Computer Assoc. - Bedford

ACCPAC Bedford 1.2 ..... 145.

### In House Software

In House Accountant ..... 135.

### Intuit

Quicken 1.5 ..... 35.

### Meca Ventures

Managing Your Money ..... 134.

### Nolo Press

For The Record 2.0 ..... 31.

Will Maker 4.0 ..... 36.

### Reality Technologies

WealthBuilder ..... 144.

### Softsync/Bloc

Accountant Inc. Pro ..... 344.

### Softview

MacinTax 1040 1990 Tax .... 58.

MacinTax State Sup. .... 48.

if:X Personal Tax Analyst .... 47.

if:X Expense Reports ..... ea.49.

Taxview 1040 Pro ..... 335.

### Survivor Software

Invoice It ..... 48.

MacMoney 3.5 ..... 58.

### TELEWARE Incorporated

M.Y.O.B. 2.0 ..... 144.

### The Software Toolworks

Dollars And Cents 5.0 ..... 62.

### TimeSlips

TimeSlips III 2.0 ..... 194.



# Call for products not listed



DATA RECOVERY  
HARD DISK BACKUP  
DISK OPTIMIZATION  
FILE MANAGEMENT

Central Point Software

## Central Point Software Mac Tools Deluxe

Mac Tools provides utilities for data recovery, file protection, and disk management. You can make backups of your hard disk whether on Apple tape drive or a set of floppies. Other utilities in the collection undelete accidentally-erased files, recover damaged files, compress files, defragment files, and encrypt them. A DA finds "lost" files fast.

**Mac Tools Deluxe ..... \$78**



## ASD Software FileGuard

FileGuard 2.5 protects your hard disk from unauthorized access. With it, you can limit access privileges to specific folders (including the system Folder), to particular users or work groups, and create "drop folders". FileGuard prevents others from copying or erasing the contents of your hard disk and offers password protection for your applications.

**FileGuard ..... \$138**

## BUSINESS & PRESENTATION

### Aldus/Silicon Beach

Persuasion 2.0 ..... 328.

### AISB

How To Write

A Business Plan ..... 85.

### ASD Software

Planisoft ..... 194.

### Ashton Tate

Full Impact 2.0 ..... 145.

### Avery Labels

Avery Mac Label Pro ..... 48.

### Blyth Software

Omnis 5 1.104 ..... 645.

### CE Software

Alarming Events ..... 84.

### Claris

FileMaker Pro ..... 217.

### Delta Point

Deltagraph 1.5 ..... 108.

### Fox Software

Foxbase II/Mac 2.01 ..... 291.

### Individual Software

Power Macros

For Excel 2.2 ..... 33.

### Informix

WingZ 1.1a ..... 244.

### Inman Software

Business Plan Toolkit ..... 95.

### Jam Software

Smart Alarms 3.0 ..... 62.

### Kiwi Software

KiwiEnvelopes! ..... 33.

### LISI

Sales & Mktg Manager ..... 295.

### Mainstay

Mac Flow 3.5 ..... 168.

### Mainstay

MacSchedule 2.0 ..... 138.

Mac Schedule Plus 1.0 ..... 198.

### MediaLab

PictureLink 1.0 ..... 215.

### Microsoft Corporation

File 2.0 ..... 123.

PowerPoint 2.01 ..... 244.

Excel 2.2 ..... 244.

Office ..... 524.

Works 2.0 ..... 178.

### Newton Technology Inc.

GEOvista ..... 169.

### Odesta

DataDesk 3.0 ..... 458.

Double Helix III 3.0R6 ..... 388.

### Power Up

Fast Forms 2.0 ..... 104.

### Preferred Publishers

Database 1.5 ..... 66.

Direct Mail ..... 50.

### Prescience

Expressionist 2.03 ..... 78.

Theorist 1.1 ..... 250.

### Satori

Bulk Mailer 3.2.3 ..... 74.

Bulk Mailer Plus 3.2.3 ..... 165.

### Shana Corporation

Informed Designer 1.0.4 ..... 158.

Informed Manager ..... 98.

Informed Auto Form ..... 74.

### SoftStream International Inc.

HyperTax Tutor 1.0 ..... 61.

### Softview

if:X SF-171 Federal Emp App 31.

### Software Discoveries

Record Holder Plus ..... 84.

### Storm Technologies

Picture Press ..... 120.

### Strategic Mapping Inc.

Atlas \* MapMaker 4.5 ..... 368.

### Symantec

More 3.0 ..... 264.

### Symmetry

Key Plan ..... 264.

Mariah ..... 93.

### Synex

MacEnvelope 5.0 ..... 56.

MacEnvelope Plus 2.0 ..... 158.

### Westware Inc.

Contact Ease ..... 245.

### Williams & Macias

Sticky Business ..... 50.

My Disklabeler III ..... 41.

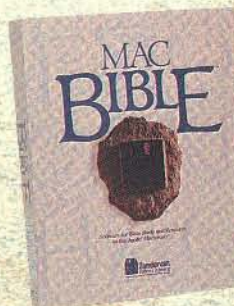
### Wolfram Research, Inc.

Mathematica Enhanced ..... 698.

Mathematica Standard ..... 448.

### Zedcor, Inc.

Desk 3.03 ..... 228.



## ZonderVan Electronic Publishing macBible

ZonderVan macBible presents several different versions of the Bible to help you understand its meaning more clearly. macBible quickly finds the passage you want to study. It can open five text windows and one special purpose window at once. Three study modes open the Bible to your questions. The word-and-phrase mode locates individual words, phrases, and groups of words. The verse modes displays any range of verses by book, chapter or verse. The Count mode displays statistical information about words or groups of words to complete your study.

**macBible ..... \$58**

## UTILITIES

### Aladdin Systems

Shortcut ..... 45.

Stuffit Deluxe 2.0 ..... 62.

### Alsoft

DiskExpress II ..... 56.

### ASD Software

FileGuard ..... 138.

### Baseline Publishing

APB Express Tape ..... 58.

INIT Manager ..... 34.

Talking Moose ..... 23.

### Beagle Bros. Inc.

Flash ..... 126.

### Berkeley Systems Design

After Dark 2.05 ..... 22.

Stepping Out 2.02 ..... 48.

### Casady And Greene

QuickDEX ..... 33.

### CE Software

DiskTop 4.0 ..... 62.

Quick Keys 2 Version 2.0 ..... 93.

### Central Point Software

Mac Tools Deluxe ..... 78.

### Custom Applications

Freedom Of Press 3.0 ..... 254.

Freedom Of Press Light ..... 55.

### Dantz

Retrospect 1.2 ..... 147.

Retrospect 1.2 w/Remote ..... 264.

### Darlana Technology Group

Mac Sleuth System Profiler ..... 85.

### Dubclick Software

ClickChange ..... 40.

### Fifth Generation

Disklock 2.0 ..... 117.

Fast Back II 2.5 ..... 117.

Powerstation 2.5 ..... 33.

Pyro! 4.0 ..... 24.

Suitcase II 1.2 ..... 48.

SuperLaserSpooler 2.02 ..... 92.

SuperSpool 5.0 ..... 61.

### ICOM Simulations

Mac Kern ..... 58.

On Cue 1.3 ..... 34.

### Insight Development Corp

MacPrint 1.2 ..... 93.

### Kent Marsh

Macsafe II ..... 106.

Night Watch ..... 84.

Quicklock 2.0 ..... 56.

### Kiwi Software

Kiwi Finder Extender ..... 64.

### La Cie Limited

La Cie Serial Talk (Single) ..... 115.

### Loop Software

Picture Book ..... 38.

### Microcom

911 Utilities ..... 88.

Virex 3.0 ..... 58.

### Microseeds Publishing

Screen Gems ..... 38.

INIT Picker 2.0 ..... 35.

Redux ..... 48.

### Now Software

Now Utilities ..... 74.

### Power Up

Address Book Plus 2.0 ..... 51.

Calendar Creator ..... 34.

### Salient

Disk Doubler 3.0 ..... 44.

### Symantec

S.A.M. 2.0 ..... 66.

S.U.M. II ..... 98.

Norton Utilities ..... 83.

### Tactic Software

MasterFinder ..... 49.

## Timeslips III 2.0

Timeslips III for the Mac is the ultimate time tracking and billing software system. With it you'll find that your workday is being spent more productively, and that your billings are much more complete. The features and functions are so simple, they practically run themselves.

**Timeslips III ... \$194**

## INPUT AND OUTPUT DEVICES

### Articulate Systems Inc.

Voice Link ..... 199.

Voice Navigator II ..... 495.

### DataDesk

Mac 101 Keyboard ADB ..... 128.

Switchboard ..... 158.

SwitchboardTrack Ball ..... 97.

### Dest

Scanner W/Recognize ..... 685.

### Hewlett Packard

Deskwriter (300 DPI) Printer758.

### Kensington

Turbo Mouse (512K & Plus)108.

Turbo Mouse ADB ..... 108.

### Keytronics

Mac Pro KB-105 ADB ..... 117.

### Kodak

Diconix B&W Printer ..... 488.

Diconix Color Printer ..... 1,100.

### Logitech

Scanman Model 32 ..... 338.

### Micro Touch Systems

UnMouse ..... 180.

### MicroSpeed Inc.

MacTRAC (512/Plus) ..... 60.

MacTRAC TrackBall ADB ..... 74.

### Mouse Systems

Little Mouse A+ (512/Plus) .. 74.

### Mouse Systems

Little Mouse For ADB ..... 74.

### Olduvai

Read It! OCR 2.1 ..... 274.

Read It! Personal 2.1 ..... 138.

### The Complete PC

Full-page Scanner ..... 757.

Half-page Scanner ..... 294.

### Thunderware

ThunderScan Plus ..... 198.

Lightning Scan 400 ..... 384.

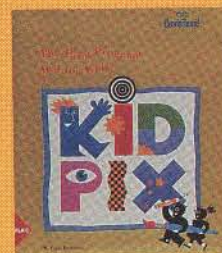
### WACOM - Graphic Tablets

Complete line available ..... Call.

## Brøderbund Kid Pix

Kid Pix is an amazing paint program created just for kids. It combines special effect art tools, picture stamps, sounds and magic screen transformations to turn the computer into a magical art studio. And with Kid Pix, you don't just paint a masterpiece, you hear it too! Every brush and tool has its own unique sound effect. You can even record greetings, poems or music to enhance your creations

**Kid Pix ..... \$31**



CALL NOW • 1-800-248-0800 • THE MAC ZONE



The Mac  
Zone  
Established 1986

# Last chance to stock Prices will never



## Paracomp FilmMaker

The Eddy Award winning FilmMaker is the masterful animation and multimedia graphics program. This amazing application allows the user to create professional quality presentations and animations quickly and easily! What takes hours to create in other applications can now

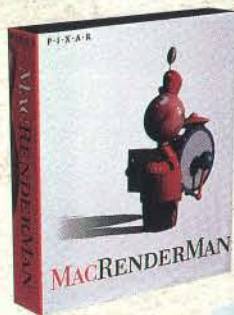
be done in just minutes with FilmMaker. Whether you're a professional animator who wants to create stunning effects for video, or just someone who wants to put their ideas in motion FilmMaker is the ultimate answer.

**FilmMaker .....\$438**

## Tactic Software MasterFinder

MasterFinder is the complete disk management utility. MasterFinder allows for the complete control and manipulation of files and folders on any hard drive or floppy disk. MasterFinder is a total replacement for the Mac Finder. Using a concept of window panes as its basic user interface, each pane displays file names from a directory of a mounted drive. MasterFinder's start-up view, the "Pane" View, consists of four panes that can display information on all mounted drives.

**MasterFinder .....\$49**



## Pixar MacRenderMan

Honorable Mention - 1990 MacUser Editor's Choice Award for Best 3-D Modeling/Rendering Package. Combine any 3-D program to create photographic-quality images with most advanced rendering software.

**MacRenderMan .....\$630**



## Pantone, Inc. Pantone Process Color Imaging Guide

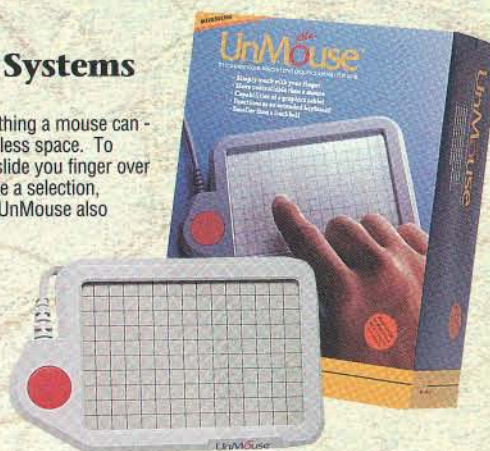
The PANTONE Process Color Imaging Guide is the perfect companion to all Pantone-licensed software programs. It provides a visual comparison of solid PANTONE Color and process simulations as they would appear on the final printed piece. As many PANTONE Colors cannot be satisfactorily reproduced in four-color process, this publication provides the user with the information to best decide whether to specify spot of process color while working on the desktop.

**Pantone Imaging Guide .....\$48**

## Microtouch Systems UnMouse

The UnMouse does everything a mouse can - only faster, easier, and in less space. To move the cursor, simply slide your finger over the glass surface; to make a selection, merely press down. The UnMouse also serves as an extended keyboard. Tap the large red button and you instantly have a Power Keypad with 16 keys available to execute macros (60 in advanced mode). With its one million touch points the UnMouse also performs admirably as a graphics tablet.

**UnMouse .....\$180**



## Toyogo Nemesis GO MASTER Deluxe

Go combines Japanese philosophy and business strategy into their national game. Go Master Deluxe, winner of the Chaos Manor Users Choice Award (Byte 1990), unites the Go playing and teaching abilities of Go Master, the corner-opening tutorial, Joeski Genius, and the life and death consultant, Tactical Wizard.

**Nemesis GO MASTER .....\$94**

## MUSIC

<b>Ars Nova</b>		<b>OpCode Systems Inc.</b>	
Practica Musica 2.2 .....	68.	MIDI Play .....	42.
<b>Bogus</b>		MIDI Translator .....	42.
Super Studio Session 2.0 ....	64.	<b>Passport Designs</b>	
<b>Coda</b>		MIDI Interface .....	84.
Finale 2.5 .....	548.	Sound Exciter .....	48.
MusicProse 2.0 .....	298.	MasterTracks Pro 4.0 .....	318.
<b>Great Wave</b>		MIDI Transport .....	275.
Concertware + MIDI V5.0 ....	97.	Note Writer II .....	318.
<b>Mark Of The Unicorn, Inc.</b>		<b>PG Music</b>	
Performer 3.5 .....	375.	Band-in-a-Box .....	57.
Pro.Composer 2.3 .....	375.	<b>Tactic Software</b>	
<b>OpCode Systems Inc.</b>		Sound Clips 1-4 .....	ea. 48.
EZ Vision .....	99.		

## VIDEO BOARDS & MONITORS

<b>E-Machines Retail</b>		<b>Rival Monochrome Monitor</b>	
Full Page Color System		19" MacII, SE, SE/30 .....	1,190.
T-16 8-bit for Mac II 16" .....	2275.	<b>Sony</b>	
T-16 24-bit Mac II 16" .....	4140.	14" Sony 1304 Color .....	825.
<b>Compact 2-Page Color System</b>		<b>Raster Ops</b>	
TX 16" 8-bit, MacII, si .....	3450.	ColorBoards	
TX 16" 24-bit MacII, si .....	4150.	208 8bit Mac II .....	379.
<b>Full 2 Page Color System</b>		24si .....	815.
T-19 8-bit II, Si, SE/30 .....	4575.	24s .....	545.
T-19 24-bit MacII .....	5695.	264 24bit SE/30 .....	658.
<b>Lapis Technologies, Inc.</b>		364 Video Color Board .....	975.
Classic Monitor .....	649.	ClearVue GS/30 .....	1,675.
Mac Plus Monitor .....	679.	ClearVue GS II .....	1,675.
<b>MegaGraphics</b>		<b>Sigma Designs</b>	
16" Color Systems		L View Multi-Mode	
8-bit Hi-Res MacII .....	2,590.	For MacII family .....	1,475.
8-bit Hi-Res SE/30 .....	2,590.	SE/30 & IIsi .....	1,475.
24-bit Hi-Res MacII .....	4,890.	<b>Pageview Series</b>	
<b>19" Color Systems</b>		Pageview GS IIsi & IIsi .....	649.
8-bit Hi-Res MacII .....	4,295.	Pageview Mac II Monitor .....	850.
24 Bit Hi-Res Mac II .....	6,390.	Pageview SE Monitor .....	850.
<b>Gray-Scale Systems</b>		Pageview SE/30 Monitor .....	850.
19" Bit MacII .....	1,875.	Silverview Mac II .....	1,850.
19" 8-bit SE/30 .....	1,895.	Colormax 24 .....	4,350.



# up on SIMMS

## be this low again

### Jasmine 40 MB Portable Hard Drive

Jasmine Technologies has consistently finished first in the MacUser Lab's Buyers Guide and we've been praised in every major Macintosh publication for the quality of our drives and for the ease of use in DriveWare, our custom drive utility. DriveWare, provides the best SCSI partitioning, password protection, error correction, diagnostic and help software.

**40 mb Portable Hard Drive ..... \$299**  
**40 Mb for Mac II, IIfx, and IIfx ..... \$349**



### PLI CD-ROM Adobe Type-On Call

The PLI CD-ROM is the most fully featured drive available. It has a self-cleaning objective lens, eliminating bothersome dust problems and offers audio output through a 1/8" headphone jack and two RCA jacks. Volume control for the headphones is provided by a convenient dial on the front panel. PLI software is compatible with virtually every CD-ROM drive on the market, and supports all of the HyperCard audio XCMDs. It also allows channel control

on those drives which support it. Included with the CD-ROM is Adobe Type-On-Call.

**CD-ROM and Type-On-Call ..... \$775**



### Dest Personal Scan

The DEST Personal Scan is the first scanner to combine full-page, one pass, hand-held scanning with sheetfeed scanning in one desktop unit. Now you can easily read almost any document into your computer: books, manuals, technical documents, even oddly-shaped or over-sized originals are no problem with the full-page, hand-held unit; or place it into the automatic document feeder and scan up to 10 pages at a time, fully unattended, for real productivity. And Best of all, the Personal Scan comes bundled as a kit that includes everything you need to begin scanning today such as: high quality 300 dpi scanning resolution, powerful Recognize! omnifont OCR, graphics capture, cables and interface, one year warranty and comes in MAC and PC models.

**Personal Scan with Recognize .... \$685**  
**Recognize OCR Software ..... \$515**



### Mass Microsystems DataPak Removable Hard Drives

Voted the best by the industry critics, it's still the first family of removable cartridge drives for the Macintosh. With 45 megabytes on each removable All Mass Microsystems drive products come bundled with Disk Doubler Utility from Salient.

**DataPak ..... \$724**  
**DataPak IICx ..... \$778**  
**Quick Image ..... \$748**



## DATA STORAGE DEVICES

### Applied Engineering

3.5" 800K Disk Drive ..... 194.  
 3.5" HD 1.44Mb Disk Drive.228.

### CD Technology, Inc

Porta Drive CD ROM Drive .648.

### CRU - Data Port

45 MB ..... 319.  
 80 MB ..... 475.

### Cutting Edge

20 Mb Ext ..... 328.  
 30 Mb Ext ..... 388.  
 45 Mb Ext ..... 438.  
 60 Mb Ext ..... 488.  
 80 Mb Ext ..... 528.

### Dayna Communications Inc

DaynaFile II 360K ..... 445.  
 DaynaFile II 1.2Mb ..... 445.  
 DaynaFile II 1.44Mb ..... 445.

### Everex Systems - EMAC

150 Tape Backup Drives ..... 895.  
 60 Tape Backup Drive ..... 658.  
 Impact w/Norton Utilities  
 20 Mb ..... 385.  
 40 Mb Hd ..... 520.  
 80 Mb Hd ..... 750.  
 105 Mb Hd ..... 805.  
 170 Mb Hd ..... 1,305.

### Datacell

Quantum External  
 40 Mb Ext ..... 399.  
 105 Mb Ext ..... 589.

### Datacell

#### Quantum Internals

40 Mb ..... \$349.  
 105 Mb ..... \$529.

#### La Cie Limited

Tsunami 40 Mb ..... 595.  
 Tsunami 50 Mb LPS ..... 645.  
 Tsunami 80 Mb ..... 815.  
 Tsunami 105 Mb ..... 865.  
 Tsunami 100 Mb LPS ..... 915.  
 Tsunami 120 Mb ..... 1,125.  
 Tsunami 170 Mb ..... 1,225.  
 Tsunami 210 Mb ..... 1,325.

#### Mass Micro Systems

DataPak ..... 724.  
 DataPak IICx ..... 778.  
 DataPak MO ..... 3424.

#### NEC

Intersect CD-ROM Drives  
 CDR-73 CD ROM Drive ..... 665.

#### PLI

Superfloppy 1.4 ..... 448.  
 Turbofloppy 1.4 (1.4 Only) 298.  
 CD-ROM Drive ..... 750.  
 w/Type on Call ..... 775.

#### Removable Drives

Infinity '88' ..... Call  
 Infinity40 Turbo ..... 748.  
 Infinity40/40 Twin ..... 1,475.  
 Optical 600 Mb ..... 3,794.  
 Optical Cartridge ..... 235.

Turbo 250 Mb Ext ..... 1,725.

#### PLI

Turbo 300 Mb Ext ..... 1,975.  
 Turbo 600 Mb Ext ..... 2,750.

#### Rodime Systems

Plus 20 Mb Ext ..... 299.  
 Plus 45 Mb Ext ..... 449.  
 Plus 45 Mb Rem. .... 589.

#### Cobra External

45 Mb ..... 550.  
 70 Mb ..... 795.  
 100 Mb ..... 860.  
 210 Mb ..... 1,295.  
 330 Mb ..... 1,895.  
 650 Mb ..... 2,775.

#### Cobra Internal

45 Mb ..... 410.  
 70 Mb ..... 675.  
 100 Mb ..... 735.  
 210 Mb ..... 1,165.  
 330 Mb ..... 1,725.

#### Syquest

Syquest 44 Meg ..... 74.

**Look for IDS Pro Drives & WIP Drives - Next month at MacZone.**

### DataPort Drives

Before DataPort, drives were either inexpensive or well supported, but

not both. DataPort backs all

its drives, including the mechanism,

with a full two year warranty and a 30 day

money back guarantee. We can afford to do this because

DataPort drives are made with top of the line components and endure rigorous testing. DataPort drives are made by CRU, one of the leading suppliers of drive components.

**DataPort 45Mb ..... \$319**  
**80Mb External ..... \$475**



### LaCie Tsunami 40 mb Drive

Tsunami drives come initialized with SilverLining, the standard of hard disk utility software, and SilverPlatter. Apple's system, five megabytes of public domain software and Norton Utilities are also included on the drive. Ask your MacAdvisor about the new 2 plus warranty on Tsunami drives.

**Tsunami 40 mb Drive ..... \$595**

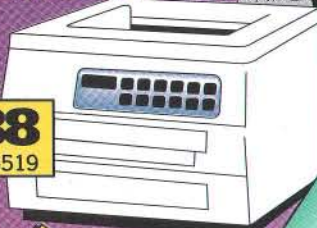




# LASER BITMAPMED Bites The Dust PRINTERS TI MICROLASER

- 17 Fonts
- Toner
- Cable
- AppleTalk

**\$1588**  
SAVE \$519



Do you have an appetite for laser quality printing?



Wow! You can really clean up on this deal!

**79 FREE!**  
Type 1 Fonts  
• 6 month subscription to Publish  
• 50% off 1st order of additional fonts (with printer purchase)

## MacFriends Will Sweep You Off Your Feet!

- Knowledgeable Staff
- 1000's of Products In Stock
- Pre-Configured & Tested
- Unbeatable Support & Service

Ask About QuickKor Kare

## APPLE IIINT

- AppleTalk
- 35 Fonts
- Toner
- Cable

**\$2988**  
SAVE \$1010



Call our MacFanatics today toll free

**800 331-1322**

...or use our 24 hour QUICKFAX (503)255-0067

COMPUSERVE "GO MF"

**MacFriends**



Call Your Laser Printer Professionals Today!



ing at Apple a few years ago. I was there as a contractor to a third-party consulting firm, brought in for a couple of months to assist a small (three-person) team that was modifying a licensed commercial product for use in some dealer-demonstration and guided-tour disks. The exposure to Apple's innards was indeed enlightening, though not at all encouraging. I did very much enjoy working with the team. We managed to get everything done in time, I acquitted myself well, and when the contract ended, I was asked to consider a full-time position at Apple. I turned it down without a second thought.

That was no reflection on the people there; on the contrary, I found the majority of the people I came in contact with to be bright, talented, and committed. But the image of the thermocline came to mind again and again. There was upper Apple management, basking in the sun; the great mass of Apple employees below; and between the two, a constantly shifting layer of middle managers whose function appeared to be to keep the two groups from mixing. Stuff came drifting down from above, but little seemed to make its way up from below. Not only did reporting assignments constantly change, but so did cubicle assignments, often on very short notice. One Monday morning, I arrived at what I thought were the team's cubicles to discover an entirely different group of people in them, looking as though they had been occupying them for months. The sense of disorientation was unnerving; I felt as though I had dropped into some alternate universe. It turned out that the team had relocated over the weekend, though it took me the better part of an hour to find where they had relocated to.

Employee reaction to this whole environment ranged from good-natured humor to cynicism to a sense of betrayal and bitterness. It was obvious that many of these people really did want to change the world; they found that mostly they changed managers, departments, and cubicles. And while I can't claim that what I saw was reflective of the entire Apple organization, either then or now, it does give a clue as to why Apple, with all its resources, has been less than


effective in bringing significant, reliable technology to the world for the past few years.

### Is Small Beautiful?

One last thought to ponder: Is the size of those resources, the sheer number of Apple employees, a liability more than an asset? In the August 1984 issue of *BYTE* magazine, there was an interview with three of the original Macintosh project designers—Jef Raskin, Brian Howard, and Bud Tribble—who had left (or been forced out of) the project before its completion, and who therefore received little recognition when the Mac shipped. The interview's last question was, could something like the Mac be done again in 1984(!); Howard's answer was telling: "I think it could, but only by a similar process, a little group splintering off, working separately from the big group. I don't think it could be done on purpose, as Macintosh was not done on purpose."

When I look back at the last seven years, I realize how few major changes or improvements there have been in the Mac design over that period. There's been the Hierarchical File System (which should have been there in the first place), slots, color, varying screen sizes, the virtual desktop, and some limited I/O processing in the IIfx (currently unusable under the Mac OS). That's about it.

This suggests that Apple is either heading down a blind alley or that Apple's best resources are going into a new generation of machines designed to supersede the Mac, as the Mac did the Apple II. Either case suggests that the Macintosh design has peaked and has started down the long slope toward death. The Macintosh project started ten years ago; in another ten years, I doubt Apple will be selling Macintosh systems, though there will still be millions around and in use well into the next century.

The Mac is dead. Long live the Mac. 

Contributing editor Bruce F. Webster is vice president of R&D at San Diego-based Pages, Inc. He can be reached via BIX (bwebster) and via MCI Mail (Bruce Webster).



# And the Winner is...

ACADEMY  
OF  
MOTION PICTURE  
ARTS & SCIENCES  
AWARD OF MERIT  
FOR  
OUTSTANDING  
ACHIEVEMENT



## MacGlare/Guard™

Visit us at NCGA Booth 913

But you are the real winner when you use MacGlare/Guard™—the ultimate relief from eyestrain, fatigue, and headaches caused by glare. OCLI's patented Invisiglass® coating eliminates 99% of the glare, stops annoying flicker, enhances contrast and improves readability.

In fact, MacGlare/Guard™ has the same patented coating that was honored by the Academy of Motion Picture Arts and Sciences. That's right! In 1968, OCLI received a Class II Scientific or Technical Award "for the development of an improved antireflection coating for photographic and projection lens systems."

There are also models available that shield the user from 99.99% of the low frequency E-field electromagnetic radiation. Combine all this with safety glass, and you have features you just won't find in any other filter. MacGlare/Guard™ filters are available in your choice of blue or neutral gray glass, and custom fit your Macintosh so perfectly you won't even know it's there. But your eyes will!

So, for the award-winning technology that's used in the movies and on your monitor, get a MacGlare/Guard™ filter. For more information, call toll free 1-800/545-OCLI (6254).

**OCLI** Optical Coating Laboratory, Inc.  
Glare/Guard Products Group  
2789 Northpoint Parkway  
Santa Rosa, California 95407-7397  
800/545-OCLI (6254) FAX 707/525-7595

Glare/Guard® and Invisiglass® are registered trademarks of Optical Coating Laboratory, Inc. (OCLI). © 1991 OCLI. All rights reserved.

## MacGlare/Guard™ The Best You'll Ever See!

MacGlare/Guard filters fit all Mac, Mac SE, Mac SE-30, Mac Plus, Mac II Color, Apple Two-Page Mono, Apple Color RGB, SuperMac and Mac 512K models. Priced from \$79.95.

Circle 374 on reader service card



# "We've Broken the Price Barrier to Large Screen Productivity!"



## We've Made Large Screen Productivity Affordable.

Our engineers and designers were given the charter to build no-compromise display systems. The result is a full line of large screen display systems that rival the very best (Radius, SuperMac and RasterOps), at prices that make them a better value. The savings that you realize are not due to product differences so

"Most Mac owners don't have large screens because they can't 'afford' them. So they put up with the squinting, eye strain, and the constant scrolling on a 9" screen. What a tragic loss of productivity!

But now with the ability to purchase factory-direct, you can't afford *not* to own a large screen. Without dealer markups and rep commissions you save over 40 percent.

But not all large screen systems are alike, so do your homework! We have. And the result is four complete systems designed to seriously impact your productivity.

We're so proud of our display systems that each comes with a 30 day "Love-It-Or-Return-It" guarantee. So take advantage of this risk-free opportunity to increase your productivity with a large screen. You'll wonder how you ever lived without it!"

*R. E. Eibensteiner*

Ronald E. Eibensteiner, President/CEO

much as distribution differences. You see, we choose to bypass the middleman, thereby eliminating rep commissions and dealer mark-ups to save you over 40 percent.

## Finally, A 20" Trinitron® System That Breaks The \$3000 Barrier!

Our engineers designed our ProView®8 System around Sony's patented Trinitron® technology, which has become the standard by which all Macintosh screens are measured. Expect vivid color, superior geometric linearity, and sharp focus, only before available in systems selling for twice the price.

We designed our ProView interface cards to minimize component count and power consumption for superior reliability and long life. Our ProView 8-Bit Interface lets you choose between 1, 4, or 8 bit modes and gives you up to 256 colors.

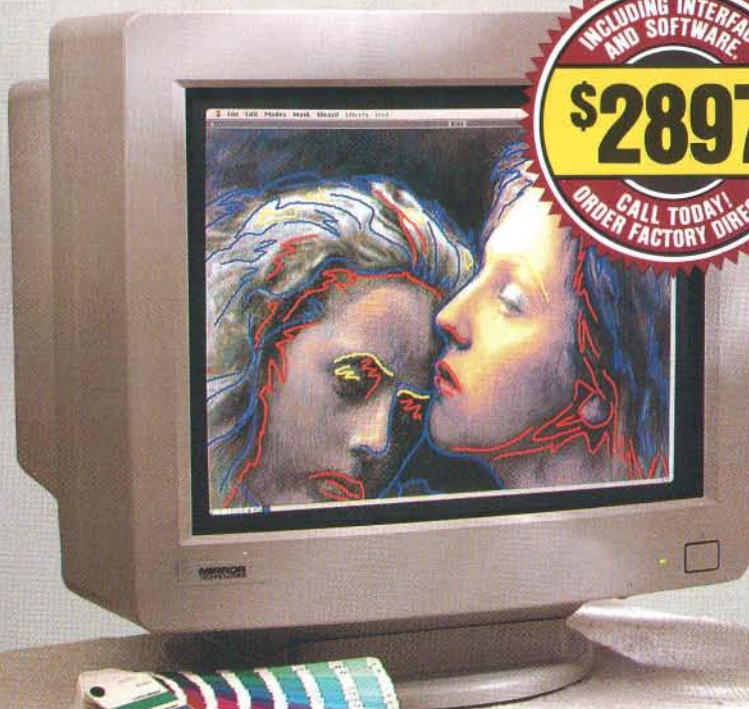
## At \$3997 Our 24-Bit Trinitron® System Costs Less Than Most 8-Bit Systems.

Our new ProView/24 Trinitron® System gives you photographic image quality with 16.7 million colors available. If you're doing desktop publishing, color graphic design or retouching color photos, ProView/24's photo-realism will enhance the speed and quality of your productions.

## Our PixelView II Gives You WYSIWYG Scaling For Under \$1000!

You've heard the reviewers speak of WYSIWYG (what you see is what you get) scaling and its importance to graphic applications. Now it's available on a two page display for under \$1000!

Our engineers chose P104 phosphor for reduced eyestrain. And an anti-glare coating that allows the PixelView II to be used in any lighting situation. Plus a screaming 78Hz refresh rate for a rock solid flicker-free screen image.





## View An Entire 8½"x11" Page For Under \$500!

Our PixelView I portrait display allows you to view a full page at one time. You get a paper-like display with a crisp, stable image. And like all Mirror displays, the PixelView I has its own memory so it won't slow down your computer (like the Ilii or Ilii's built in video circuitry). Its ergonomic design takes a minimum of desk space and adjusts to any viewing angle.

## EXCLUSIVE! DeskTop Designer™ Software With Every Mirror Display System.

DeskTop Designer™ is a unique set of utilities that lets you custom configure your new display system. Until now, features like Pop-up Menus, Enlarged Cursor and Menubar, Screen Saver and Screen Copy were available only from Radius on systems costing twice the price. These important features are included with every Mirror Technologies display system!



Trinitron® system at no extra charge. This sophisticated graphic design and re-touching software was awarded 5 mice by MacUser France.

## Designed For Plug & Play Simplicity.

Each Mirror display system was designed to make installation and operation a snap. All systems include everything you'll need to get up and running: monitor, interface card, cables, and software.

## FREE! Award Winning VideoPaint... A \$495 Value.

For a limited time, we are including Olduvai's VideoPaint with every ProView

## Large Screen Display Systems For Virtually Every Macintosh.

We have a color interface for every Mac II and the SE30. And monochrome systems for the Mac Plus, Classic, SE, SE30 and all Mac IIs. Whether your application requires color or monochrome, we have the solution!

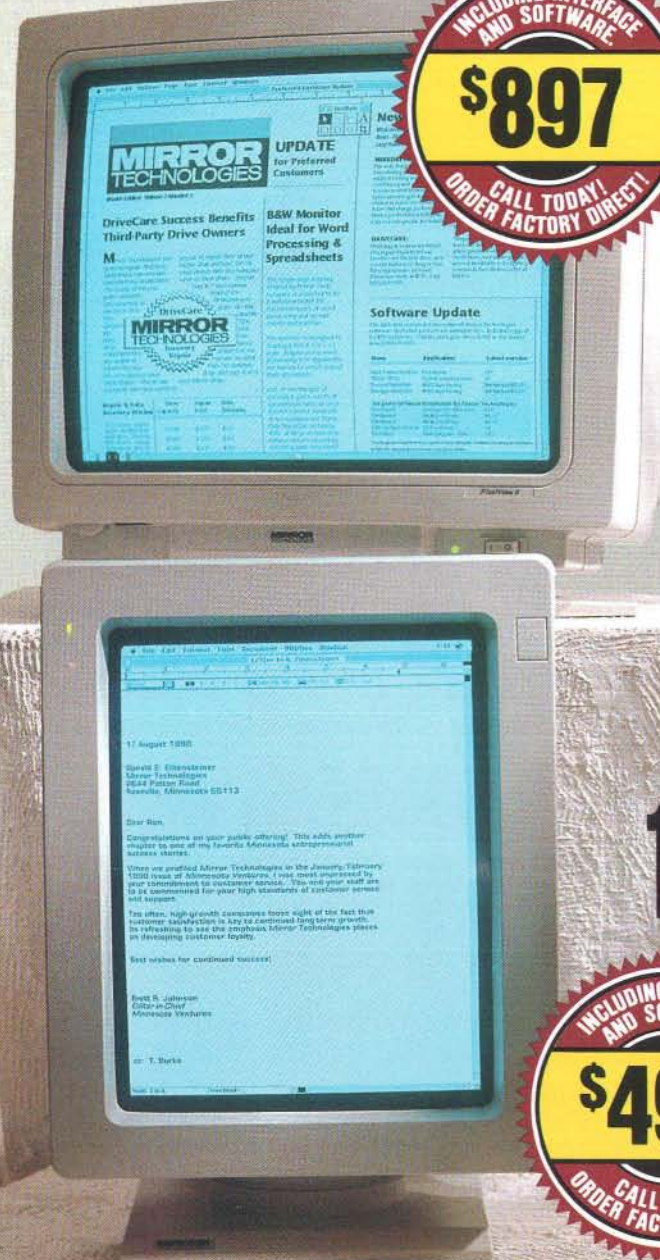
## Your Mirror Display Could Be On Your Desk Tomorrow!

Our 30 day "Love-It-or-Return-It" guarantee lets you try one for 30 days risk-free. We ship 95 percent of our orders within 24 hours, so you'll be saving time and money.

**Mac  
Classic Displays  
Shipping Now!**

## Make The Right Choice!

	PixelView I	PixelView II	ProView 8	ProView 24
Display type	1-bit mono	1-bit mono	8-bit color	24-bit color
Screen size	15"	19"	20"	20"
Viewing area (sq. in.)	90.77	151.58	151.58	151.58
Resolution (dpi)	80	72	72	72
Vertical refresh	75	78	75	74
Pop-up menus	Yes	Yes	Yes	Yes
Enlarged menubar	Yes	Yes	Yes	Yes
Enlarged cursor	Yes	Yes	Yes	Yes
Screen saver	Yes	Yes	Yes	Yes
Screen copy	Yes	Yes	Yes	Yes
Full year warranty	Yes	Yes	Yes	Yes
VideoPaint	No	No	Yes	Yes
DeskPaint v1.5	Yes	Yes	No	No
Tilt and swivel	Yes	Yes	Yes	Yes
Works with Plus, SE, CLassic	Yes	Yes	No	No
Dealer markup	No	No	No	No



Call Today! Order Factory-Direct.

# 1-800-654-5294

TECHNICAL SUPPORT HOTLINE: (612) 633-2105  
Hours: Weekdays 8 a.m. - 6 p.m. CST  
Telephone: (612) 633-4450  
Fax: (612) 633-3136  
2644 Patton Road, Roseville, MN 55113



Mirror Technologies, PixelView, and ProView are trademarks of Mirror Technologies, Inc. All other trademarks and tradenames belong to their respective holders. Price availability subject to change without notice. Not responsible for typographical errors. The Mirror monitor utilizes the "Trinitron" cathode ray tube manufactured by Sony Corporation. "Trinitron" is a registered trademark of Sony Corporation. © 1991, Mirror Technologies, Inc.

Circle 243 on reader service card



## THE PLUS IS DOS/MAC COMPATIBILITY.

Introducing the Kodak Ektaplug 7016 printer. Equipped with Adobe PostScript language/Appletalk interface options, it can support both DOS and Macintosh computers simultaneously!

Configure it with four ports, and it can support up to four users, or even four networks.

Six emulations make it an ideal shared printer for any work group.

## THE PLUS IS 16PPM SPEED.

Twice as fast as traditional printers, the Kodak Ektaplug 7016 printer can make you at least twice as productive. It maintains fast, high-quality throughput, even when printing Adobe PostScript language. It helps you get more done in a day.

## THE PLUS IS A COPIER.

Imagine the convenience of having a built-in copier for those frequent one- or two-copy jobs! The Kodak Ektaplug 7016 printer comes standard with a 6 pages-per-minute convenience copier that keeps everybody on the job instead of on the run. For the name of the dealer nearest you, call 1 800 344-0006, Ext. 456.



# THE PRINTER WITH A PLUS. KODAK

Kodak Ektaplug 7016 printer

Circle 377 on reader service card





# Verbatim

AN INTERVIEW WITH SÖREN OLSSON, PRESIDENT OF APPLE EUROPE

BY JERRY BORRELL

**S**ören Olsson has spent most of his life and career in Sweden, where he was born in 1945. While studying chemical engineering he began using computers in research but gradually became more interested in the mathematical aspects of the sciences. In 1969 he began work for Hewlett-Packard, where he remained for 15 years. He joined Apple in 1984 as director of Apple Sweden. In 1985 he became general manager for the Nordic countries, then was made vice president for northern Europe in 1988.

Last year Olsson was chosen to fill Michael Spindler's former position as president of Apple Europe. Olsson's demeanor and staid white shirts belie a warmth known only to initiates of Scandinavian cultures. Even today he carries an enthusiasm for Apple Computer rarely seen in the United States.

**MW** How did you start at Apple?

**OLSSON** I decided to join Apple Computer after being offered the general managership for Sweden. I wondered if Apple could make a second success like the Apple II. My friends said to look at the Apple III and the Lisa, that there was no second great success in store for the company. In 1983 at Comdex, I kept wandering by the Apple booth and passing by the Lisa. You recall the paradigm shift that machine represented. This was another way of doing computing. And the Mac was being talked about in late 1983. I saw the Lisa and thought about it at a lower price and knew that it

would be a winner and would start new business, and that it was a fantastic product. That's why I joined.

**MW** Why has the Mac been so successful in Scandinavian countries?

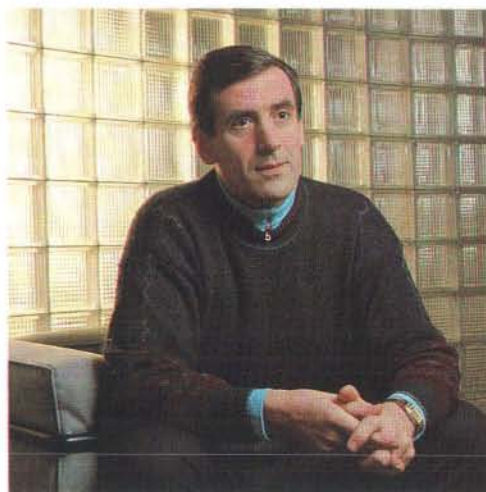
**OLSSON** The Mac has been successful all over the world. During my first six weeks at Apple I spent time chatting up all of the company's channel partners [retail sellers] to get them enthusiastic. Everyone welcomed me, but no one made a commitment. I asked all the big resellers to put their resources behind the Mac. I told them that I wanted dedicated teams to sell the Mac. No one was willing to make that investment.

So I went back to see the largest five resellers. I said "I'm going to choose one of you five to be our outlet." And I asked them to tell me why I should choose one of them for the job. We were lucky that two of them said that they wanted to distribute the Mac. But [even they] said that it wouldn't work, that there was only MacPaint and MacWrite. That was a major issue then—[the lack of] applications. I decided that Apple Sweden would become a Microsoft distributor to convince Microsoft to do a [software] localization for this market.

There were no resellers. No channel. I asked, Where are our friends in this market? And thought of the universities. Like in the U.S., where

universities formed consortiums to use the Mac. I asked Michael Spindler, "If we can get one university to support us, can we sell very aggressively?" He said, "Yes, go ahead." So I met with the University of Lund. And some Macs were carried back [to the school] by hand. It proved to be a perfect fit.

This will probably go down in the history books. It was the first time a university in Sweden made a cooperative agreement with a commercial



PHOTOGRAPHS BY STEVE MUIREZ

computer company. There was government investigation afterward because of the perception that the students would be required to purchase the computer and to use this or that with it. But we got PR and exposure from that... and that helped us in business [markets]. And over the next six months all of the Nordic countries, including Iceland, had distributors.

(continues)



**MW** What markets does Apple Europe deal with?

**OLSSON** I talk about a new Europe: Western Europe now including the USSR, Poland, Czechoslovakia, Hungary, Albania, Yugoslavia (where we already do some business), the Middle East, and Africa.

**MW** How do you rank your markets in terms of importance?

**OLSSON** In two ways. By overall potential and by where we are today. First are France, the United Kingdom, and Germany. France is important, but in the future, with the unification of Germany, it [Germany] will play a new role as a hub of Europe and in the development of Eastern and central European countries. Development will spread via Germany.

Of the current markets, we have done extremely well in France, Sweden, Finland, and Switzerland. We are a major player in all these markets, with a 15 percent share in each.

**MW** Does Apple plan a second manufacturing center for Europe in the Netherlands?

**OLSSON** Apeldoorn, in the Netherlands, will be a northern European operations center. It will also serve in distribution and localization, not manufacturing. We plan a [manufacturing center] in southern Europe: either Spain, southern France, or in northern Italy.

**MW** What are your plans for Eastern Europe?

**OLSSON** I think that right now we need to get businesses to fit each country. What we are doing is to prioritize on Hungary and Russia—the localization for these two, and for Poland and Czechoslovakia.

**MW** How long will that take?

**OLSSON** I don't know. And I don't want to set expectations for these markets. I think of them in the near term not as a country market, but as an IS [Information Systems] strategy for the

end of the nineties. One-third of the European business market is in Eastern Europe.

**MW** Have the recent events in the Soviet Union made a difference to Apple's plans there?

**OLSSON** Political developments have not changed our beliefs or our priorities. We looked at the Soviet Union as a long-term opportunity from day one. If we had been more opportunistic and tried to sell more Macs, then today's events would have made an impact. Some people have been criti-



*The Soviet Union must  
computerize its society if  
the country is to keep up*

cal of me for not working harder to make sales there, for not taking the short-term view of how many Macs can we sell today. I have taken the long-term view of building the relationship, so that if there are hiccups in the politics, we can review our position. But really, the Soviet Union has no other options. They must computerize their society if they are to keep up. So for us there is no change. We are continuing to build relationships and to strengthen our partners, such as the University of Moscow, which is now officially involved in the localization of our operating system. The university may become our first official reseller in the Soviet Union.

**MW** Will Apple Europe ever design a computer?

**OLSSON** My dream, absolutely. We need to commit to research in Europe and make an increased investment. Who can tell what research and development will do in Europe, Cupertino, and Tokyo in the ten years to come—we'll serve a great many things in different countries. Apple's vision is to empower individuals with technology. Europe can bring a lot to that: ISDN, networking.

**MW** Traditionally, haven't system software releases been a problem in Europe?

**OLSSON** In the past we used to lag with software releases in different countries. Last October we were able to release a total of 13 different versions of System 6.0.7 simultaneously in the U.S. and Europe.

**MW** In 1992 the market for Apple in Europe will change.

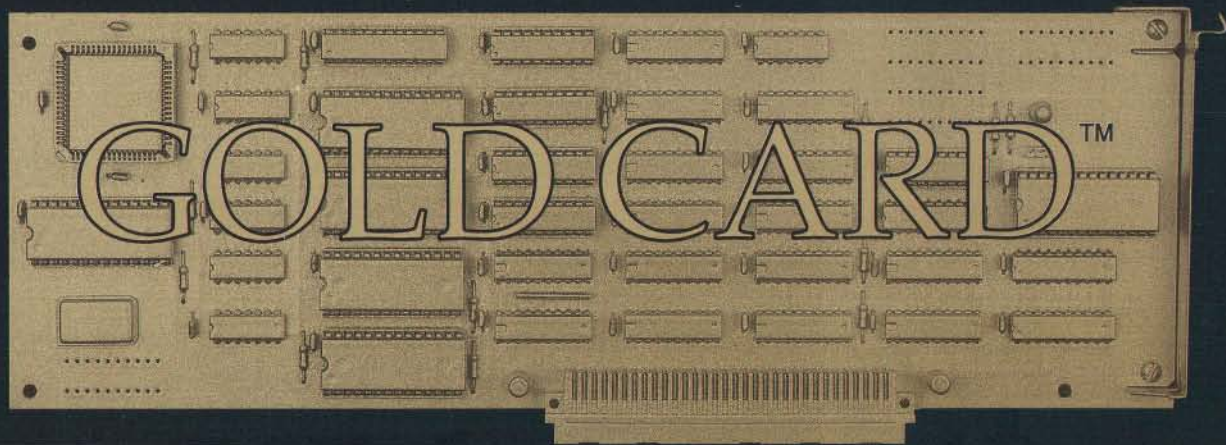
**OLSSON** We're ready. It's already '92 from our point of view. We have European pricing, strategy, and the margin structure is the same across Europe. '92 is a good milestone to bring the Continent together for one market.

**MW** You have chosen the United Kingdom as a test market in Europe for the Macintosh LC, providing shipments there over other countries. Why?

**OLSSON** We have actually picked three countries, the United Kingdom, Italy, and Sweden. Why did we choose Italy? Because it is truly dominated by DOS machines from IBM and Olivetti. This gives us a good opportunity to understand what will be the effectiveness of the LC [in competition with DOS machines] and could help us with new thinking about the Italian market. In terms of why Sweden, we wanted to look into one market where we had good market share. We couldn't use France or all of our production of LCs would simply disappear—the market is too big. The Classic, of course, is doing well over all of Europe, but we wanted to see what the impact of the LC would be on an existing strong  
*(continues)*



# Don't Boot Up Without It!



## Macintosh II General Purpose Data Compression Card

Pinnacle Micro introduces the world's first 32-bit compression/decompression board for Macintosh II computers.

The Gold Card compresses data on the fly and is completely transparent to the user.

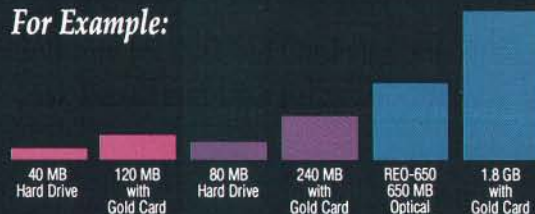
The card is a high performance *lossless* data coprocessor board specifically designed for use with hard disks, tape drives, floppies and optical drives.

Data compression rates are 20 times faster than software, with hardware data rates over 1 megabyte/sec.

The Gold Card will change the way you store your data forever.

Multi-media, desktop publishing, CAD/CAM and data base files are reduced 2-8 times their original size. On average, you will expand your storage capacity up to three times.

### For Example:




The Gold Card is so fast that you will not see any performance decrease when storing data. The only thing you will notice is an increase in your available storage capacity.

The card is as easy to use as creating a new partition on your storage device.

All data that is placed in the Gold Card partition is compressed and decompressed on the fly.

Software for the Gold Card also provides full Disk Repair and Disk Recovery utilities.

*A CARD WORTH ITS WEIGHT IN GOLD*

 (800) 553-7070

**PINNACLE MICRO**

THE OPTICAL STORAGE COMPANY™



# A COLOR SCREEN FOR YOUR MAC PORTABLE, CLASSIC, PLUS OR SE.



**S**cuzzyGraph™ is the computer industries' first SCSI compatible graphics controller. This unique product gives Mac owners the flexibility and power they've always wanted.

## INSTANT INSTALLATION...

ScuzzyGraph allows an instant connection of a larger screen color or monochrome monitor to the SCSI port of any black and white Mac (Classic, Plus, SE and Portable).

**LARGE SCREEN...** All ScuzzyGraphs are capable of operating with any VGA, AppleColor 13" RGB compatible, Apple Portrait or Aura's 19" monochrome monitors (19" color monitors available).

**POWERFUL...** Built around a powerful and flexible graphics processor, ScuzzyGraph has its own intelligence which frees your Mac from refreshing the screen.

**FLEXIBLE...** Dual screen software is provided with all models and virtual desktop is also available. ScuzzyGraph is QuickDraw compatible and conforms to Apple's eight color specification.

CALL TODAY...  
**(800) 365-AURA**  
**(619) 438-7730**

**AURA SYSTEMS**

PO Box 4576, Carlsbad, CA 92008

ScuzzyGraph is a registered trademark of Aura Systems

market. The United Kingdom is also an area where we have a relatively low market share, but the market is fragmented [among many PC vendors]. Our hope and belief is that the LC is the winning card that will allow us to return to the relative strength of the Apple II in that market in 1980. The LC is our opportunity to return to the U.K. market.

**MW** How have the Classic and the LC fared now in their sixth month?

**OLSSON** Not only have they fulfilled our plans but also they have surpassed our hopes. Now I can tell you some figures from our first quarter. We have increased our sales shipments in Europe 100 percent over last year in the same quarter. No other company in Europe has increased its market share in personal computers, but I can tell you that it is a reality for us.

The Classic is at the lead. We made a big mistake by misunderstanding the impact of that machine. We sold more than a factor of two over our forecast. That makes it sound like we don't know about our own business, but look at other companies that didn't achieve one-quarter of their sales expectations. That tells us how difficult it is to make accurate sales projections. On the other hand, it tells us about the Mac's success in the marketplace.

**MW** What about the LC? Has it been as successful as the Classic?

**OLSSON** In December we began tests in the U.K., Sweden, and Italy, and we completed the tests in January. Before the tests we predicted that the Classic would be the student machine, and so for the last four months we have positioned the Classic as a student machine. [We assumed] the LC would certainly be better liked by students and educators, but not small business. But [while] the Classic has been seen as a better entry machine for students, the LC has had a similar phenomenon of acceptance for business applications, especially in horizontal applications, presentations, and business graphics. So now we are faced with the challenge of how to manage this mix of CPUs.

**MW** How do you characterize Macintosh sales in Europe overall?

**OLSSON** Overall in 1990 in the European market, 6 million personal computers were sold. Out of that, one-half—over 3 million—were sold in the \$2500-and-under price range. Our point of view is that we only competed in the upper price range of systems. Our lowest-priced system [in 1990] was greater than \$4000 [when fully configured].

We see the Classic, LC, and si as adding new business to Europe. For the first time, we can compete in the entire marketplace. Suddenly we are able to sell Macs right in the middle of the price range. We have both hope and belief in what the LC will mean to us. We have a color machine right in the middle of the market.

**MW** Apart from the architectural CAD market, Apple has not been successful in CAD. Many people say it is now too late for Apple to compete in this arena.

**OLSSON** I don't believe that it is too late. We talk about a market that is a moving target. We have to target areas with developers, and as we get forward speed, we have to be more customer and market focused. And to focus our resources we have to be sure that we have the right tools. In the engineering community that may be CASE, CAD, CAM, or others; there is a broad definition of CAD. The need of an electrical engineer is entirely different from that of a mechanical engineer.

I encourage you to believe that in the next 9 to 12 months we will move in that direction, and that it is not too late. We are addressing the market with partners in Europe.

**MW** Apple Europe has developed a seed or venture capital fund for developers. What is it? Why did you do this?

**OLSSON** When we created it we saw the need to broaden the development on our platforms. At present 90 to 95 percent [of application development] is done in the U.S. and North  
*(continues)*





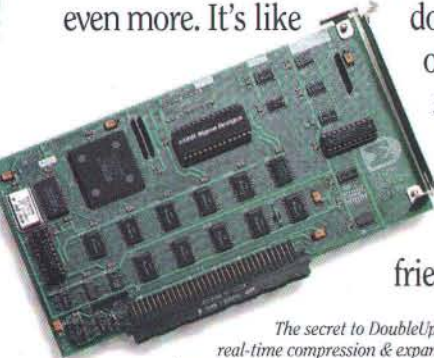
# SQUEEZE MORE FILES INTO YOUR HARD DRIVE.

Double your disk capacity for only \$229\* with DoubleUp™ from Sigma Designs.

DoubleUp compresses any data, image, or application file — so fast you'll hardly notice it happening. You *will* notice your disk capacity expand, by 100% or even more. It's like

doubling the number of hard drives in your system for only \$229.

DoubleUp comes with DiskDoubler™ software for user-friendly operation, and a



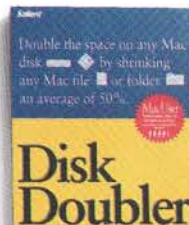
*The secret to DoubleUp's speed is in this card — it gives you real-time compression & expansion. That means you get your files when you want them — at the click of a mouse!*

Macintosh NuBus card for unbeatable speed. So you can work with files the way you usually do, even after they're compressed. And data is never lost or altered.

How did we squeeze so many features into DoubleUp at such a reasonable price? To find out, call 1-800-933-9945 today for the name of your nearest authorized Sigma Designs dealer.

**SIGMA  
DESIGNS**

46501 Landing Parkway • Fremont, CA 94538 • TEL: (415) 770-0100 • FAX: (415) 770-0110



*DoubleUp comes with DiskDoubler software, rated 4 1/2 mice by MacUser.*

\*Suggested retail price. ©1991 Sigma Designs, Inc. DoubleUp is a trademark of Sigma Designs. DiskDoubler is a trademark of Salient Software, Inc. All other trademarks are the property of their respective owners.

Circle 62 on reader service card



**FORTWO YEARS,  
DYNODEX® HAS BEEN  
THE FASTEST,  
MOST FULL-FEATURED  
ADDRESS MANAGER  
FOR THE  
MACINTOSH.**

**NOW IT'S YOUR TURN  
TO MOVE FAST.**

**IF YOU BUY THE NEW  
DYNODEX 2.0  
BEFORE  
AUGUST 1, 1991,  
PORTFOLIO SYSTEMS  
WILL SEND  
YOUR CHOICE OF  
DYNODEX PERSONAL  
ORGANIZER PAPER  
(A \$25 VALUE) FREE.**

Actual Size.—This WordStyle was printed to personal organizer paper with the help of DynoPage (available separately). Now print from any program to any size paper (just like this).

**FREE PAPER.**

**DYNODEX**  
The Real Contacts Database

Dynodex 2.0 now prints labels, envelopes, and Rolodex cards.  
To receive your package of free paper, you must send in your registration card  
with: 1) a sales receipt dated before August 1, 1991; and 2) your choice of paper  
(an order form is in the package). One free package per person.  
Dynodex is a registered trademark of Portfolio Systems, Inc.  
91 E. Market St. Rhinebeck, NY 12572. (914) 876-7744 Fax: (914) 876-7747  
©1991 Portfolio Systems, Inc.

Circle 56 on reader service card.

America. If you look at the European computer industry, a few of the companies have been successful. But [Europe has developed] a lot of competence in the software point of view. Traditionally, software companies have worked with customers and not with specific application [development], so we need to help developers on the Mac. We saw this as an issue and recognized that, first, the home market is smaller than in North America. We needed to help not only from the dollars-and-capital-investment point of view, but also with tools. And to help them to go abroad, help them localize, and find channels for marketing their products.

So we asked what we should do. We founded Advent, and together with others we invested \$15 million in the fund, but overall the total fund is \$60 million. We look either for companies marketing applications on the Mac or companies developing technology interesting for Apple in the long term.

**MW** Apple is very visible in Europe, especially in France, and yet Apple is dwarfed by IBM in Europe. How will you compete in personal computers with IBM?

**OLSSON** In five years we won't outgrow DOS in Europe, where we compete with several platform technologies looking at the broad range of IBM PCs and clones, Compaq, Olivetti, and the third tier like Amstrad. I believe we can match any one of these brand names, including IBM in the DOS market.

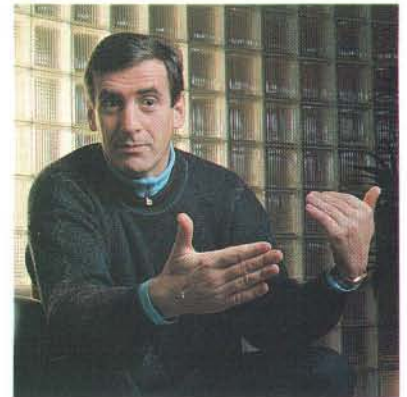
**MW** The success of the Classic, si, and LC has been such that, as is the case in the U.S., dealers in Europe are upset with the lack of supply of new machines.

**OLSSON** There are two subjects that I face when I go out and work with the resellers, depending upon which quarter we're in. Either they're beating me down because we don't have Macs available or they are beating me up because they have no way to make money on selling our machines.

We are ramping up on products like the Classic. We originally planned to have the Classic and LC produced

in Singapore. But now we produce the Classic in Cork [Ireland] and the LC in Fremont [California] as well. We are talking about going to a third shift in Singapore and air shipping; we're talking about building plants. We've doubled the size of the Cork plant. I am really pleased with the response from the manufacturing people at Apple. Eighty percent of the products we ship now are different from those we shipped in the last quarter!

**MW** In the U.S., we can't purchase the SE/30 in retail outlets, so I assume that this machine continued to sell well?



*If we license our  
operating system, we  
should select partners  
who can bring something  
to the party*

**OLSSON** There is also a shortage of SE/30s in Europe. Six months ago we asked ourselves what the impact of the new machines would be on the current product line. We thought that the SE/30 would be squeezed in the middle. But SE/30 sales have gone on to a higher level since the introduction of the new machines, so there was no [negative] impact by the introductions. It just goes to show that when you have winners in the product family, they boost the product line overall. We found out from the market that there is still a need for an (continues)



# AW...WHAT THE HECK!

## DesignCAD 2D/3D

### Professional CAD System for the Macintosh

When we introduced this product we had to ask ourselves, "What should DesignCAD cost?" To help with our decision we hired accountants. We consulted with industry "movers and shakers". We purchased the finest spreadsheets available. Many people said, "The software should sell for \$3,000.00 or more." Others said, "It's good, darn good—sell it for at least \$2,000.00." Opinions varied. Finally we said, in the Great American Tradition, "Aw... What the Heck! Let's see the competition beat this **\$699.00**."

DesignCAD has disproved a common misconception about computer software: you don't always have to spend a lot of money to get high-power quality software. DesignCAD for the Mac has features of CAD systems costing thousands of dollars! Yet, DesignCAD is priced at least 50% to 80% BELOW comparable CAD packages... **AND DESIGNCAD IS BETTER!**

#### Excellent Software Compatibility!

Along with extensive hardware support, you get software compatibility! DesignCAD comes with (at no extra charge, of course!) file transfer utilities to let you read and write files in other formats such as IGES, DXF, HPGL, XY or XYZ coordinates, ASCII text files, EPS, Postscript and PICT or PICT2. **NOW THAT'S COMPATABILITY!**

#### DesignCAD offers fully integrated 3D geometry!

Need 3D capability? Great! Look at how DesignCAD fully integrates its very powerful 3D mathematical foundation with excellent 2D drafting attributes, which are in a league all of their own, offering first-rate ease of learning and use.

#### DesignCAD is easy to use!

Tests prove that DesignCAD's user-friendly interface allows you to quickly produce complicated drawings in a fraction of the time required from the competition. Flexibility and power found within DesignCAD means you save **time** and **money!** DesignCAD is truly the CAD system that ANYONE can use!

### The Power of Intelligence!

### only \$699

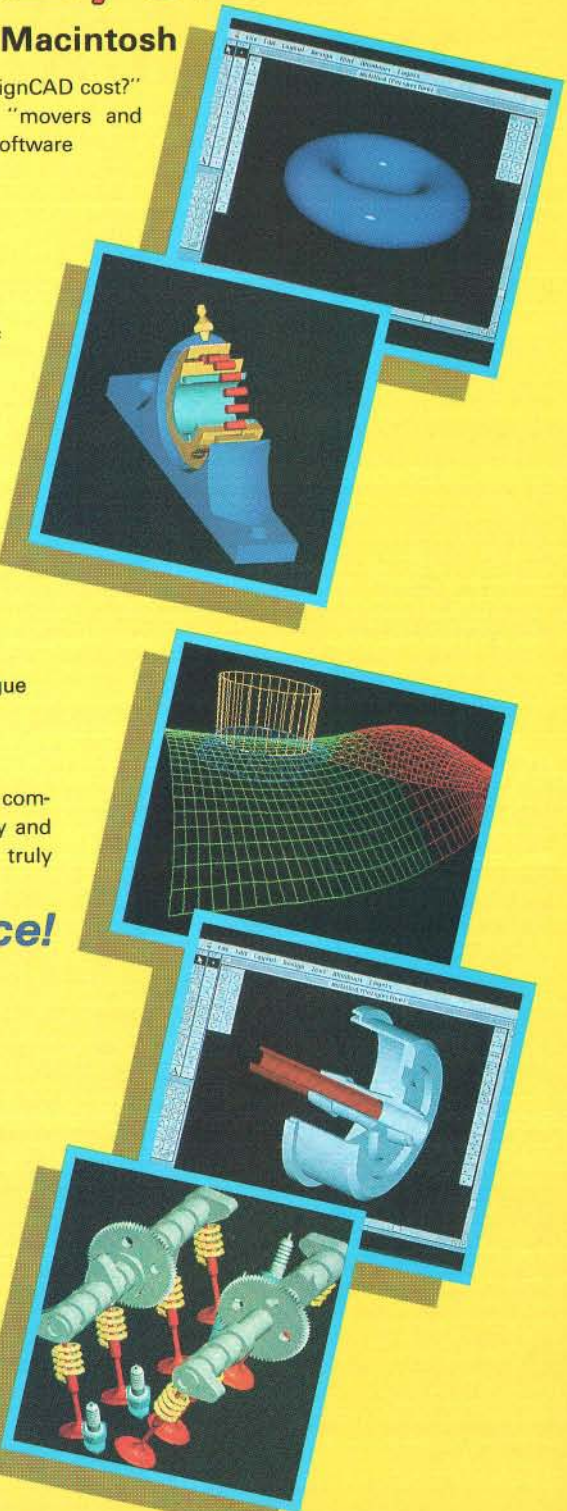
#### Features Include:

- Floating-Point precision
- Math coprocessor support
- Automatic & Associative Dimensioning
- Tolerance options for Dimensioning
- User defined Arrowheads
- 500 predrawn Symbol Libraries
- 256 Layers
- Cubic Spline Geometry
- Bi-Cubic Surface Geometry
- Trimming
- Related and/or Auto-Update Viewing
- "Real-Time Rotation"
- Automatic Hidden-Line Removal
- Wireframe or Solids
- Perspective or Orthographic Calculations
- Ray Casted shading
- Specular Highlighting
- Unlimited color support

The list goes on and on!

For a closer look, contact your local  
Apple Authorized Dealer

or call us: 918/825-4848  
FAX 918/825-6359



Call or write for FREE BROCHURE

**DesignCAD, Inc.**

327 South Mill • Pryor, OK 74361 • 918/825-4848

Dealers Circle 336 on reader service card  
End Users Circle 337 on reader service card



# How to Master 20 Popular Macintosh Programs Without Reading The Manuals

*Macintosh Programs Can Be Learned in a Few Hours With the Right Training*

Over the past four years I've been associated with over 50,000 people attempting to learn the Macintosh computer. I've watched as each person wages their own personal, private battle to master the computer and the most popular Macintosh programs.

I've seen their frustration, have empathized with their confusion, and understood their computer fears. I've talked to workers who have had new computers and new programs simply dropped on their desk with the directive to, "learn this." I've listened to people who have struggled night after night trying to read and understand a computer manual. Can you imagine trying to understand and master 4th Dimension from the manual?

You would be surprised at the number of people who have confided with me the fact that they've literally given up ever learning some of the programs. They simply put the box on the shelf and wrote the expenditure off as a bad investment.

## **Hard Earned Money Wasted**

Can you imagine how much money has been wasted on programs and computers that are sitting abandoned? Right now think of the people working on Macs in your office. Do they really understand the machine? Do they know what to do when it goes down? How many programs are each of your people using? Have they really mastered the programs they're using? Do they know the short-cuts and valuable techniques that will save you time, money, and increase your professionalism?

## **An Excellent, Low Cost Training Solution**

Four years ago I founded MacAcademy. My purpose was to create a training organization that provided training similar in nature to the Macintosh itself - simple, easy to use, and effective.

Now, four years later the MacAcademy teaching method has proven to be extremely successful. Right now people are benefiting from MacAcademy training in over 100 cities in the U.S., in Canada, Great Britain, Australia, Japan, Hong Kong, and 22 additional countries throughout the world.

MacAcademy training is successful for one reason - it works!

## **The Video Answer**

Two years ago we introduced the MacAcademy Video Training Library. This library now includes over 52 different titles. Each video is 2 hours long and offers clear, concise, effective training for the Macintosh and over 20 popular programs. In many cases you can purchase up to 6 hours of training for one program.

MacAcademy has resisted the temptation to follow competitive training programs who have recently implemented large price increases. Our videos started out at \$49 each and are still only \$49. The best training in the business for less than \$50. This low cost training alternative has proven to be the Macintosh training choice of over 10,000 companies.

## **Guaranteed Results**

The MacAcademy reputation is excellent. Our guarantee is simple: If you're not happy we'll give your money back. No hassles or problems.

## **To Order**

On the next page you will find a current list of all MacAcademy Video training tapes now available. To order, simply fill out the enclosed order blank and send with a check, credit card information, or purchase order to MacAcademy Videos Dept. MW591 477 S. Nova Rd. Ormond Beach, FL 32174 or call the numbers listed below.

Since we've spent thousands of dollars on computers and software doesn't it make sense to invest \$49 in training?

Now is the time to start that training. Thank you for allowing MacAcademy to help you in that effort.

*Randall D. Smith - President*

---

**To Order: Call Toll Free**

**1-800-527-1914**

**FAX Orders Call**

**1-904-677-6717**

**48 Hr. Delivery**

---

## **Here's What A Few Of Our Customers Say About MacAcademy Video Training:**

*"...we doubted that video tapes would be acceptable to us. We were pleasantly surprised and favorably impressed with the quality of your tapes. Accordingly, I have enclosed an order for your latest releases."*

**Harland Anderson**  
Computer Consultant

*"...just one of the short-cuts you showed me in Word saved me 20 minutes of set-up time, not to mention frustration on a new document this morning. Thanks!"*

**Chessie Robins**

*"We wish to express our appreciation for your video series. It is demonstrational and an extremely helpful learning tool which has enabled us to grasp more easily the concepts of the Macintosh computer."*

**Marty Torres**

*"Having used your wonderful tapes for the third time I feel that we are old friends. As a result my Mac SE-30 is running 'lean and mean'. Thanks again."*

**J.J. Johnson**

*"Please accept my compliments on your training series. You explained everything so clearly and I'm amazed at how much I learned."*

**Pat Dunkel**



# MacAcademy™ Introduces

## 52 Macintosh

### Video Training Tapes



## MacAcademy Video Training Series™

477 S. Nova Rd. Ormond Beach, FL 32174 Dept. MW591

Order Phone: 800-527-1914 FAX 904-677-6717

### Videos Only \$49 Each (Check Each Desired Tape)

Macintosh (Part 1)	FileMaker Pro (Part 1)	Freehand (Part 1)	QuarkXPr. 3 (Part 1)
Macintosh (Part 2)	FileMaker Pro (Part 2)	Freehand (Part 2)	QuarkXPr. 3 (Part 2)
Macintosh (Part 3)	FileMaker Pro (Part 3)	Word 4.0 (Part 1)	QuarkXPr. 3 (Part 3)
Adobe III 3.(Part 1)	FileMaker II (Part 1)	Word 4.0 (Part 2)	Canvas (Part 1)
Adobe III 3.(Part 2)	FileMaker II (Part 2)	Works (Integration)	Canvas (Part 2)
Adobe III 3.(Part 3)	Quicken	Works (W. Process.)	Utilities, CDEV, Inits
Paints & Draws	PageMaker 4.0 (Part 1)	Works (DataBase)	MacWrite II (Part 1)
SuperPaint (Part 1)	PageMaker 4.0 (Part 2)	Works (Spreadsheet)	MacWrite II (Part 2)
SuperPaint (Part 2)	PageMaker 4.0 (Part 3)	Word Perfect (Part 1)	Persuasion (Part 1)
Excel 2.2 (Part 1)	HyperCard Basics	Word Perfect (Part 2)	Persuasion (Part 2)
Excel 2.2 (Part 2)	HyperCard (Part 2)	Design & Layout	WingZ (Part 1)
Excel 2.2 (Part 3)	HyperCard (Part 3)	MacProject (Part 1)	WingZ (Part 2)
PowerPoint	Small Mac Networks	MacProject (Part 2)	WingZ (Part #)

Number of Videos: \_\_\_\_\_ Number x \$49: \$ \_\_\_\_\_ \$3 Plus \$1/Video S & H: \$ \_\_\_\_\_

Florida Residents add 6%: \_\_\_\_\_ Outside U.S. \$3/Video: \_\_\_\_\_ TOTAL: \$ \_\_\_\_\_

NAME \_\_\_\_\_ COMPANY \_\_\_\_\_

STREET (No P.O. Boxes) \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

TELEPHONE \_\_\_\_\_

CREDIT CARD NO. \_\_\_\_\_ EXP. DATE \_\_\_\_\_

SIGNATURE \_\_\_\_\_



**8MB**

**MEMORY MADNESS**

**Mac IIci**  
**\$6688**  
SAVE \$2197  
LEASE \$168/mo.

Memory an elephant would envy at a price that's peanuts

- 8MB Fast RAM • 120MB HD
- 15" Color Monitor w/Tilt Swivel & Cable
- Keytronics Ext Kbd • Tempo II Software

**These MacFriends Systems Include:**

- Quicken Financial w/check writing
- Full Word Processor w/spell check
- Full Spreadsheet w/60+ functions
- Full Page Layout w/graphics control
- HyperCard w/address & appt. book
- Quickdex mini database
- Reads DOS & Apple II disks
- 2 Great Games
- Keyboard, Mouse & Pad
- System Software w/F/DA, D.F.A. & M.M.

Custom Configuration? It's Our Specialty!

**SE/30**  
**\$3788**  
SAVE \$1378  
LEASE \$118/mo.

Pago Pago or BUST!

- 8 MB Fast RAM • 120MB HD
- Keytronics Ext. Keybd w/Tempo II
- Pace Mac Carrying Case

Call our MacFanatics today toll free  
**800 331-1322**  
...or use our 24 hour QUICKFAX (503) 255-0067

**Mac Friends**  
COMPUSERVE "GO MF"

Don't shell out any more than you have to. Call your MacFriends today!

Ask About QuickKor Kare

FEDERAL EXPRESS

all-in-one package, despite the lack of color.

**MW** Apple Paris, your European headquarters, has come under bomb threats recently. Is Apple singled out, or are you merely an American company?

**OLSSON** We all feel the importance of the war, especially here in France. I have heard a lot on television and radio that there is a great risk of terrorist attacks. The number of people in shopping centers is down 50 percent, and the number of people in the cinema has decreased by 30 to 50 percent. People are staying home.

Apple Europe has had five bomb threats already. IBM and EDS have had the same experience. Apple is not a particular target—[some] people see all U.S. and U.K. companies as targets.

**MW** What do you think of Microsoft's announcement of its intent to cease support and development of OS/2?

**OLSSON** I remember April of 1987, when the world said that OS/2 was the end for Apple Computer and that OS/2 and PS/2 would dominate. The thought at the time was that Apple wouldn't make it. I must admit that we said we had a six- to nine-month window of opportunity, which we extended every month, quarter, and year as we moved on.

Microsoft's decision means that it will be IBM that moves PS/2 and OS/2 forward. I wonder how long IBM would have made it against all of the clones [without this move by Microsoft]; now the company [IBM] can contribute if it does OS/2. It will try to move the PC forward. Microsoft will address all of the clones now; it will put more muscle behind all of the platforms with which we compete.

**MW** What are the implications for Apple of its intended move to license the Macintosh Operating System?

**OLSSON** It is important, especially with the fragmentation of platforms, that we gain a worldwide market share of 20 percent. If we can achieve that, we'll lead the world. It is not possible for Apple to do this on its own.

Licensing the Macintosh Operating System is not on the agenda today. If we do it, we will need some carefully chosen partners, and it is important that those partners bring something to the market besides building a Mac clone. Beginning with the Classic and the LC we had to look at different margins. From a hardware point of view, we are already competing with clones. So if we should license our operating system, then we should select partners who can bring something to the party. For instance, who can add support, or who would change how we do business.

**MW** There was a recent hiccup with the Portable. A new version was set for release and then pulled back. Then it was reapproved for release. What happened?

**OLSSON** Well, I don't know the exact or technical reasons. The Portable was and is a good machine in both the way we designed it and the way we put it in the market. But some people confused it with laptops. The new version of the Portable has an improved display, and we expect current levels of sales will remain. It is not a major intro, but the customer will see an improvement in the machines.

It is always embarrassing to delay shipment of a product, but our customer surveys on the Portable are favorable. I use a Portable if I have to work at different locations. The market [for laptops] is broader than for our Portable. The customers ask for more performance, more portability. And we know that laptops are the fastest growing segment of the computer market.

In Europe, the unit growth [for laptops] was 50 percent for 1990. We are not competing in the laptop segment. Given that, our growth of market share in Europe is even more impressive. I don't know when, but we will have a laptop.

**MW** Canon, one of Apple's longest-standing suppliers, introduced its new personal printer at the CES show in Las Vegas last year, several months before Apple introduced the same printer. What happened?

(continues)



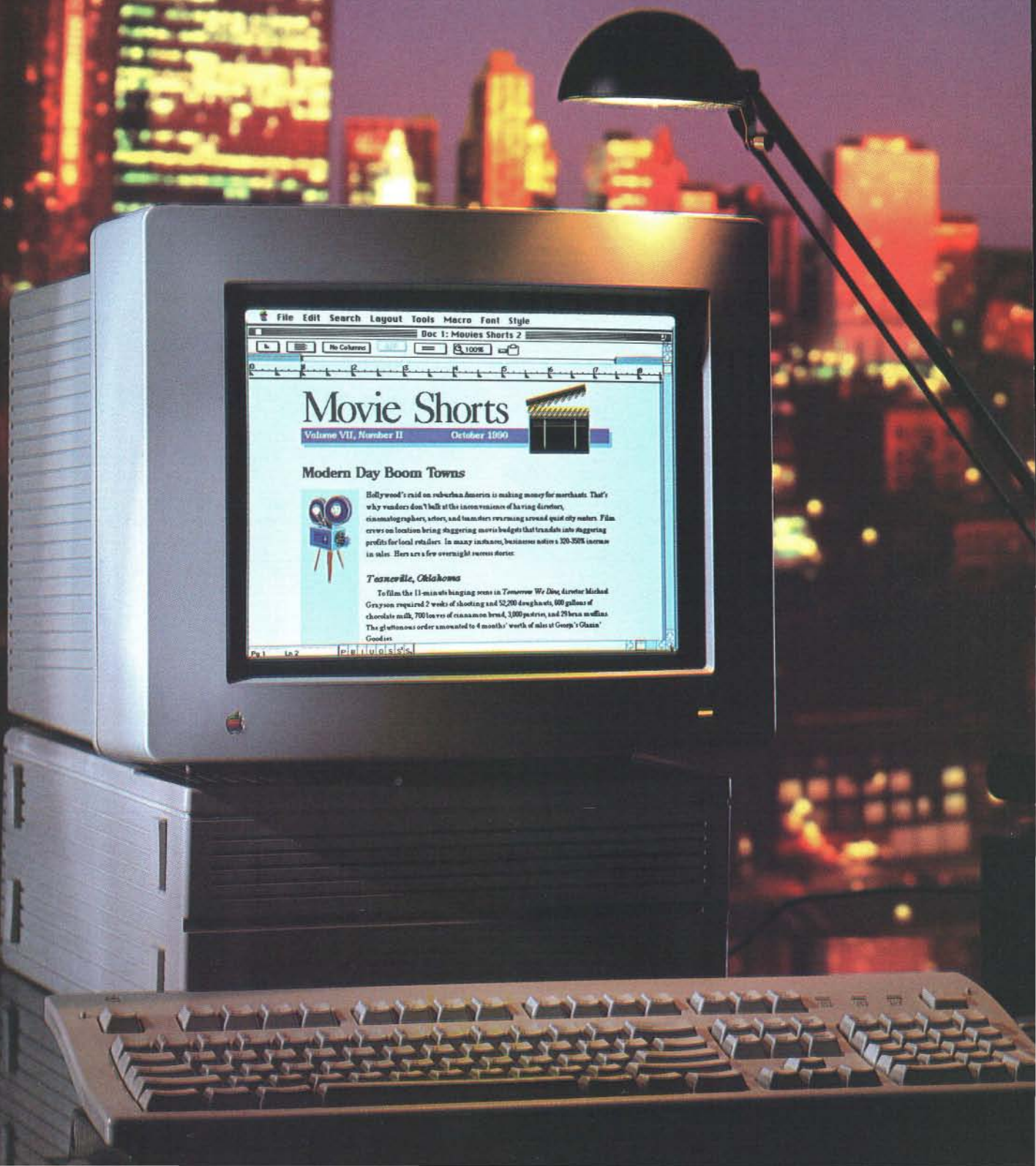


Remember the first day you  
got your hands on a Mac?

Remember how excited you felt when  
you saw all the things it could do?



This may refresh  
your memory.





## Introducing WordPerfect® 2.0.

Every once in a while a new product comes along that sparks the same kind of excitement you may have experienced with your first Macintosh

(you stayed up half the night, right?). As we've shown new

WordPerfect® 2.0 to Macintosh users around the country, we've seen a very similar reaction. First eyes open wider. Then heads start to nod. Followed by grins that stretch dimple to dimple.

**Here are some of the more graphic improvements.**

We built a graphics and drawing package right into the

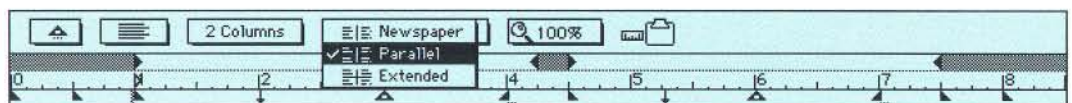
program. With WordPerfect 2.0, you don't have to leave your document to incorporate graphics. You can create, edit, size, scale and crop graphic figures just by clicking "graphics" or "draw" on the pull-down menu.

The palette includes all of the standard drawing tools, plus Bezier curves, polygons and a free rotation tool.

WordPerfect 2.0 also lets you create text boxes. Inside your text box, you can change font size and attributes. Then you can drag your text box wherever you want in your document and the rest of your text will wrap around it automatically.

**The list of new features could fill a page. Or up to 24 columns.**

By clicking and dragging icons on the new WordPerfect ruler, you can



create columns (newspaper or parallel) and then adjust the column settings, align text, set tabs, change line spacing, move margins and do a number of other formatting changes to your document.

Want to add a border to text, paragraph, column, or page? Easy.



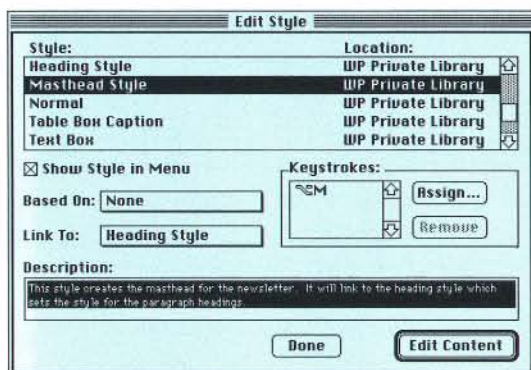
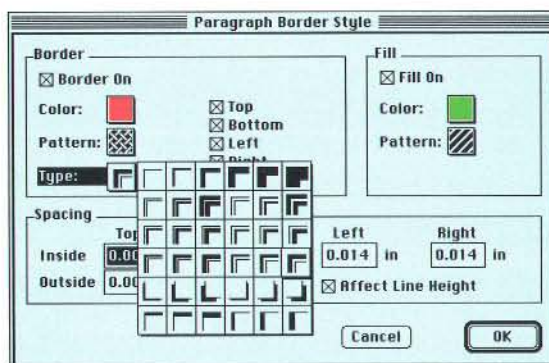
WordPerfect 2.0 gives you 36 different border styles from which to choose.



Like working with Styles? WordPerfect not only lets you use them, you can also share your styles with other people on your network.

The Speller comes with an expandable 125,000 word dictionary. The Thesaurus isn't just an add-on, it's on-line. We've also added new features like a Macro Editor, Tables of Authorities, and Line Numbering. And we've made enhancements to Merge, Search and Replace, and Macros.

**Of course, what counts is how you feel.**



See WordPerfect 2.0 up and running at your dealer. Better yet, buy a copy of WordPerfect 2.0 and load it onto your Mac. For a limited time, your dealer can give you a great trade-up allowance for your version of Microsoft Word. But when you try WordPerfect 2.0 for the

first time, one word of warning. Don't plan on going to bed early.

For more information, call us at (800) 526-5034.

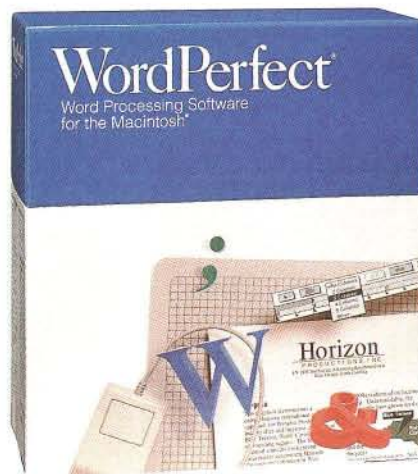
### **\$125\* Trade-up offer.**

If you have any version of Microsoft Word, we'll make it easy for you to move up to WordPerfect 2.0. Take the registration cover sheet from your Word software manual (or other proof of purchase) to a WordPerfect dealer and get WordPerfect 2.0 for just \$125\* during this offer.

Offer expires May 31, 1991.

**WordPerfect**  
CORPORATION

1555 North Technology Way, Orem, Utah 84057  
Tel: (801) 225-5000 FAX: (801) 222-5077



WordPerfect is a registered trademark of WordPerfect Corporation within the United States and some countries. All other brand and product names are trademarks or registered trademarks of their respective companies. ©1991 WordPerfect Corporation.

\*Suggested price. Offer good in the United States only.



**OLSSON** I don't know. I was surprised. If I speculate, I could say that it is related to what happens when Apple introduces a product. What we learned from the LC and the Classic is that demand does not build up over time. Demand is instant. In the mini or mainframe computer market you talk to customers and they buy one at a time. In this market you announce a machine and the customer expects to be able to buy it, especially in peripherals. So we need the printer in the thousands. Why Canon announced the printer before us, I don't know.

**MW** One of the missing pieces of technology for Apple is rich text; that is, text with attributes that can be used across all applications or platforms. When will Apple Computer address this issue?

**OLSSON** Transfer of rich text across different applications and different platforms should have top priority. Many application developers insist on

keeping proprietary document-storage file formats, thinking this is a part of their competitive advantage. I think users would rather see them adopt a common file format. Two years ago Apple's European R&D organization began an effort to integrate ODA [Open Document Architecture] standards within the Macintosh architecture. Our approach is to provide a tool kit enabling developers of applications dealing with rich text to convert their documents into ODA format and vice versa. We are planning to make evaluation versions of this tool kit available to selected developers during 1991 for feedback.

**MW** Recently we have seen the announcement of the first of a class of machines likely to be legal clones. What will be the impact of Mac clones on Apple Computer?

**OLSSON** That is a tough one. My first reaction is that if someone has gone to the trouble to make the investment

required to make a legal clone of the Mac then that is a great endorsement. I don't think that I want to comment on such machines.

**MW** But what about from a market point of view?

**OLSSON** In terms of our strategy over the last year, it relates to the fact that we need to be a bigger player in the market. It would relate to our licensing of the Macintosh Operating System. If we make that decision, then we would have to compete with our own clones. Our point of view has to be price competitive, to control costs. We already compete with DOS clones in terms of the prices of the new machines. We have to compete with everybody. If there is a legal Mac clone, then it may help us increase the Macintosh market. So it's good news and bad news. One thing is clear, that business as usual does not apply to Apple Computer any longer. **M**

## HiQ™, THE FIRST INTEGRATED SOFTWARE SYSTEM FOR SOLVING ENGINEERING AND SCIENTIFIC PROBLEMS.



Engineer, scientist, educator, student. From the most complex industry project to everyday academic problem solving, nothing compares with HiQ.

### HiQ TIES IT ALL TOGETHER

HiQ's object-based interface couples the organizational advantages of an electronic extension of the "engineering project notebook" with custom designed editors that extend beyond typical spreadsheet, graphical, and script editing capabilities.

### ANALYSIS TOOLS AT YOUR FINGERTIPS

- € Complete matrix and linear system analysis
- € Powerful equation solving capabilities
- € Data and function integration capabilities
- € Complete differential equation solving package

- € Unique integral equation solving capabilities
- € High performance Fourier analysis program
- € Sophisticated linear and nonlinear optimization functions
- € Boundary value problem solver package
- € Numerous statistical analysis capabilities
- € Powerful real and complex root finders
- € All of the special functions of applied mathematics and engineering

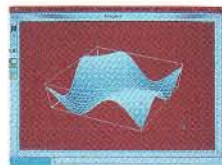
### QSCRIPT™, THE FIRST 4GL FOR ENGINEERING AND SCIENCE

The unique design of the QScript compiler eliminates the need for learning many of the typically difficult concepts in a programming language, such as data typing, dereferencing, formatting and other I/O commands. Plus, HiQ's Problem Solvers, graphical interfaces for solving problems covering several areas of applied math, automatically generate QScript code for you!



### DATA VISUALIZATION

HiQ's scientific graphics program has all the functionality and features of a stand-alone program, including interactive 2D and 3D analysis capabilities and animation.



### RESERVE YOUR COPY OF HiQ NOW — AT A SPECIAL PRICE

HiQ will be available on the Apple Macintosh® II series of computers this spring, and soon after on Sun® workstations. You can reserve HiQ for Macintosh now at a special price of \$495. Call 1-800-488-8662. VISA/MasterCard/AmEx accepted.



**BIMILLENNIUM**  
First in Power Computing Software

Bimillennium Corporation, 101 Albright Way, Los Gatos, CA 95030

Circle 233 on reader service card.



# Less Filling. TASTE's Great.



## Introducing TASTE™... the next step in the natural evolution of word processing and document design.

Before TASTE, creating newsletters, correspondence, product specifications, and term papers required the features found in many different software packages. Documents were complex and expensive to produce. With TASTE, you can avoid the complexity and bulky overhead associated with multiple applications.

TASTE blends the best and most often used features of word processing, page layout, drawing, and personal data management; integrating them seamlessly into one elegant, easy-to-use package.

### HEAVYWEIGHT WORD PROCESSING.

TASTE delivers word processing features you need. With multiple stationery documents, you control the document types you use most frequently. You directly manipulate all aspects of your document including headers, footers,

footnotes and endnotes, even while previewing your pages. There's also a built-in address book, mail merge that's truly easy to use, hyphenation, spell checking, 117,000-word dictionary, and a thesaurus with 1.4 million entries. All with amazing speed!

### BALANCED WITH PAGE LAYOUT.

TASTE balances word processing prowess with easy to use, yet powerful document design. Line and paragraph spacing, custom text styles, and paragraph styles allow you to create extraordinary documents. With multiple-column and variable-width column capability, full Macintosh® color, and a complete set of drawing tools, you'll tip the scales of desk-top publishing in your favor. You can import artwork in PICT or EPS format, automatically wrap text around pictures, and even wrap inside drawn objects!

### SO DON'T BE WEIGHED DOWN

by the high cost and steep learning curve in switching from program to program. Get the best value in word processing and document design, TASTE.

For a new TASTE from **DeltaPoint™**

See your local dealer.

Or for more information, call us at:

**800-367-4334**

# TASTE™

Word Processing / Document Layout / Design

Suggested retail price: \$149





# MACWORLD NEWS

by Dan Littman and Tom Moran

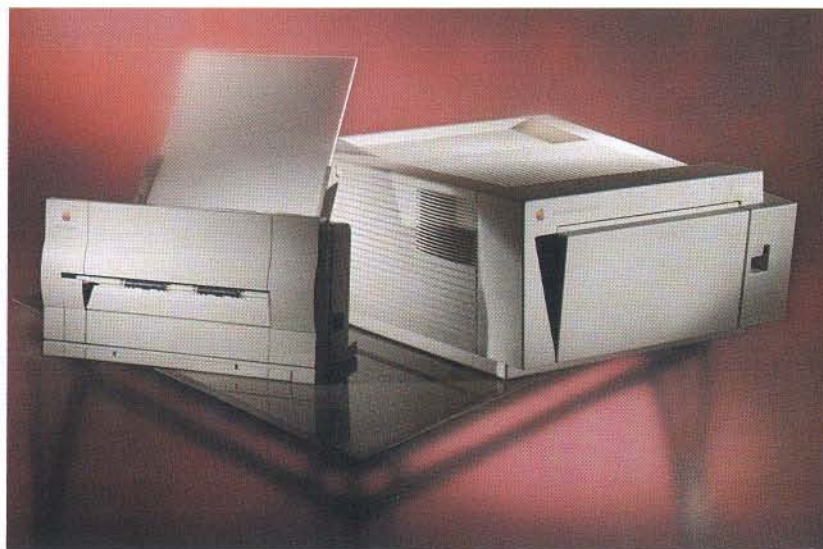
## Apple Unveils Low-Cost Printers



Apple has done for its printer line what it did for the Mac family last October: unveiled low-cost units while slashing the prices of most existing models. The latest Apple printer line should delight users and put more price-and-performance pressures on third-party printer manufacturers.

The stars of the new printer line are the \$599 StyleWriter and the \$1299 Personal LaserWriter LS (see "Personal Page Printers Arrive," in this issue). The StyleWriter is Apple's first ink-jet printer. Based on a Canon-built print mechanism, it boasts an output resolution of 360 dpi—almost 40,000 more dots per square inch than the 300-dpi resolution of the Hewlett-Packard DeskWriter, which retails for \$995. The 5-pound StyleWriter is eminently portable, and Apple expects numerous companies to introduce battery packs for the printer.

The Personal LaserWriter LS is built around the Canon LX engine used in the Personal LaserWriter NT and SC, both of which remain available (for now—the SC's life span is limited). The LS, however, doesn't include the 250-sheet paper tray found in its costlier siblings, only the 50-sheet multipurpose tray. The LS also eschews SCSI in favor of a simpler serial connection. The printer's controller board is a model of design elegance, containing fewer than a dozen components, one being a custom-designed chip that manages a sophisticated compression scheme that enabled Apple to build just 512K of memory into the printer (other laser printers require 1MB of page-buffer memory).



The portable StyleWriter (left) and the Personal LaserWriter LS set new price-performance levels for Apple. The company also cut prices on most of its existing printer models.

The StyleWriter and Personal LaserWriter LS use Apple's TrueType outline fonts. But instead of delaying the printers' release until System 7.0 becomes available, Apple decided to create a version of TrueType that works with System 6.0.7. The StyleWriter and LS will ship with a floppy disk containing the TrueType font files, the printer driver, and a system extension (an INIT) that rasterizes the fonts for the screen and printer. Both printers work with any Macintosh containing 1MB of memory and a hard drive. Both are also compatible with Adobe Type Manager. The LS's driver supports background printing under MultiFinder (new versions of the Backgrounder and Print Monitor applications are included with the printer); the first release of the StyleWriter driver does not support background printing.

As for Apple's existing printers, the LaserWriter IINTX's price is now \$4999, down nearly 17 percent from \$5999; the LaserWriter IINT now costs

\$3999, down 11 percent from \$4499; and the Personal LaserWriter NT retails for \$2599, down 21 percent from \$3299. For more information, contact your Apple dealer.—Jim Heid

## Interleaf's New Folio



People often think about books, but how often do books think about people? Interleaf is building a LISP-like artificial intelligence programming language into version 5 of its technical-documentation software. With this technology, called Active Document architecture, a programmer can create documents that understand how people use them and modify themselves to be more useful.

Grumman Space and Electronics Division in Great River, New York, is incorporating Interleaf's Active Document technology in the Portable Maintenance Aid (PMA), which Grumman (continues)





# VISION

Display products should energize your passion to produce beyond your own perceived visual capabilities. Generation Systems display solutions empower you to look beyond your Macintosh to envision what could be done...and what should be done.

With innovative display systems for virtually every Macintosh platform. From monochrome to true color. From NTSC to PAL.

Details? Contact Generation Systems.  
1-800-325-5811 or 1-408-734-2100.

**Generation  
Systems**

Apple and Macintosh are registered trademarks of Apple Computers, Inc.  
©1991, Generation Systems, Inc.



**Monochrome Display Adaptors** for the Macintosh II, Classic, Plus, SE, SE30, LC, SI, and even the Portable. Use with our 15" and 19" hi-resolution displays, or Apple's 15" and 21" displays.



**8-Bit Color Display Adaptors** for the Mac II, SE30, and SI. Delivers 256 colors or gray scales to most 13", 19" and 21" displays, including our 19" Trinitron display.



**24-Bit Color Display Adaptor** for the Mac II. Displays photographic quality images on most 13" and 19" displays, including our 19" Trinitron display.



**8-Bit Video Output Adaptors** allow Macintosh II images and presentations to be captured on video tape. Available in NTSC and PAL versions.

**Circle 170 on reader service card**





VIRGINIA LIBERATORE

**Grumman's Emil Pavlik with about 45,000 pages of documentation packed into a lunch-pail-size Portable Maintenance Aid.**

man developed, under an Army contract, for use with military weapons systems. The PMA holds 200MB of documentation in Interleaf format. A technician can plug the PMA into a jet's data bus, study information from the jet's instruments, and instruct the PMA to display diagrams showing how to remove a malfunctioning part. Other Interleaf documents write up an electronic invoice for replacement parts and upload it to a mainframe when the technician gets back to the shop; all along, the system is teaching itself how a skilled mechanic proceeds so that it can accelerate the diagnostic process next time.

Interleaf version 5 has other new features besides the Active Document architecture: standard hypertext links and links based on conditions; hot links that import dynamic data from another file, even if that file was created by another application; tracking revisions and reconciling multiple versions of documents.

Interleaf's earlier Mac versions were poorly received because they lacked many features available in the UNIX version and violated Mac interface standards, but Interleaf says version 5 will be full-featured and sport a real Mac interface.

Pricing was not set at press time. For more information, contact Interleaf in Cambridge, Massachusetts, at 617/577-9800.—D.L.

## Wise Words for War



In recent months we've seen that the end of the Cold War does not mean the end of war. At General Dynamics in Fort Worth, Texas, engineers are designing military jets that aren't scheduled

for the front lines until early in the next century. Among these jets' high-tech capabilities is the ability to respond to a pilot's spoken commands.

General Dynamics contracted with Emerson & Stern, a small company that has written linguistics and language-learning software for the Apple II and the Macintosh, to develop speaker-independent speech recognition for what General Dynamics calls "hands-off, heads-up data entry." The company is testing Soliloquy, as it's been dubbed, on Macs, though the program can run on any computer including aircraft computers. A Macintosh version of Soliloquy is also available to commercial developers for such uses as telephone order systems.

General Dynamics had several requirements for Soliloquy: complete speaker independence; the ability to handle continuous speech, including strings of numbers (pilots frequently change navigation and radio frequencies and can't pause for a confirming beep between digits); and very high accuracy. General Dynamics also wanted a software-only product that wouldn't add weight to the aircraft.

As one General Dynamics engineer explains it, Soliloquy "is based on phonetic production, not phonemic perception"—in other words, using technology that Emerson & Stern won't describe, Soliloquy determines the mouth shape that produces a sound; most speech-recognition programs graph the sound waves and compare the graph to a database

of graphs. Emerson & Stern claims that Soliloquy can recognize sets of about 200 words on a Mac IIci and can switch between word sets in real time. It also can filter out ambient noise but may require a special filter module for some environments.

For more information, contact Emerson & Stern in San Diego at 619/457-2526.—D.L.

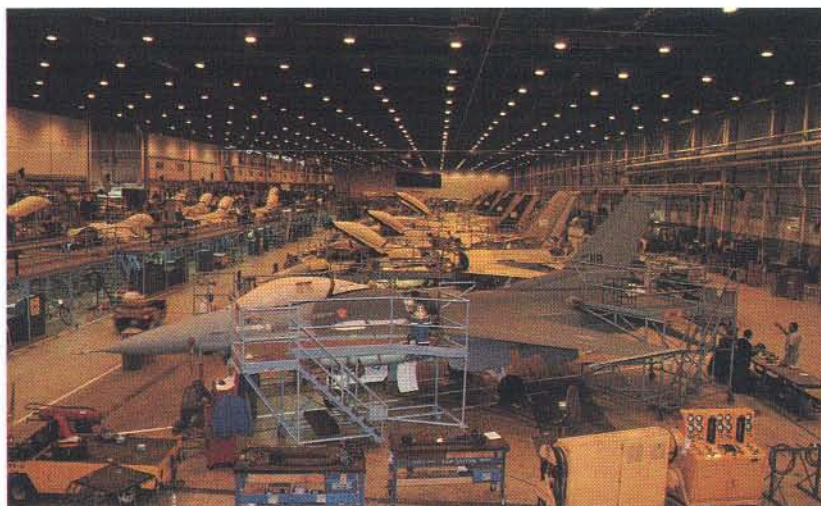
## Epson Enters Mac Arena



Printer giant Epson America has introduced the EPL-7500, its first PostScript printer designed to work with the Macintosh. The 6-ppm printer uses a Weitek RISC chip to speed processing. It comes with 35 fonts, two slots for font cartridges, and 2MB of RAM expandable to 6MB.

Based on a Minolta SP101 laser printer engine, the EPL-7500 produces 300-by-300-dpi resolution on letter- or legal-size paper, transparencies, envelopes, cardboard, and paper with punched holes. The cardboard can range in weight from 24 to 42 pounds. The EPS-7500 has a paper sensor that notices whether the print medium is thick or thin paper, a transparency, or a sheet of labels. The printer then changes the fusing temperature and the amount of toner accordingly. It comes with one 250-sheet paper cassette; a second 250-page cassette is optional.

(continues)



JEROLD CABLUCK

**The mile-long plant where General Dynamics assembles military aircraft. In a few years pilots may control these weapons by simply telling them what to do.**





# Adapt to Changing Environments With Microtek's Color/Gray Scanner.



At last, a scanner that adapts to your changing needs.

The Microtek MSF-300Z Color/Gray scanner reproduces everything from 24 bit color to 8 bit gray-scale to black and white line art. All at 300 dpi. Making it the one image capturing device that's ideal for desktop publishing, multimedia projects, presentations, even pre-press work.

And at just \$2,695, it's ideal for limited budgets, too. Especially when you consider it includes some of today's

most sophisticated color and gray-scale image editing software.

What's more, you can work in the operating environment of choice. Whether it's with the MSF-300Z for your IBM PC or PS/2. Or the MSF-300ZS for the Macintosh.

Call 800-654-4160 or in California, 213-321-2121 for all the details. And get the one scanner that adapts to whatever you're trying to capture.



*The Color/Gray Scanner is just one member of a whole family of innovative scanners available from Microtek.*



**MICROTEK**  
Better Images Through Innovation.

• Microtek Lab, Inc., 680 Knox Street, Torrance, CA 90502, (213) 321-2121 (800) 654-4160 • Microtek International, Inc., No. 6, Industry East Road 3, Science-Based Industrial Park, Hsinchu Taiwan, 30077, R.O.C., 886-35-772155 • Microtek Electronics Europe, GmbH, Schiefstrasse 72, D-4000 Düsseldorf 11, F.R. Germany, 49-211-526070 • © 1990 Microtek Lab, Inc. All rights reserved. MSF-300Z and MSF-300ZS are trademarks of Microtek International, Inc. IBM and PS/2 are trademarks of International Business Machines Corporation. Macintosh is a registered trademark of Apple Computer, Inc. • Chameleon photo by R. Dev/All Stock.

Circle 90 on reader service card





The 6-pages-per-minute EPL-7500 is Epson America's first PostScript printer designed to work with the Macintosh.

Since the EPS-7500 is also designed to work with IBM-compatible personal computers, it includes PCL 04 as well as PostScript version 52.3, and has a parallel interface in addition to its serial and AppleTalk connectors. The rated duty cycle is 3000 pages per month, and the imaging cartridge lasts for about 6000 pages.

The EPS-7500 has a suggested list price under \$3500. Epson expected to begin shipping in January. For more information, call Epson in Torrance, California, at 213/782-0770 or 800/289-3776.—T.M.

## TV Studio on a Board



The Video Toaster mixes analog video with digital information on a board. It provides software to create special effects and to function as a production switcher, frame buffer, titler, and frame grabber. Though the Video Toaster requires an Amiga 2000 or 2500, NewTek is promoting a Toaster-Amiga combination as a Macintosh peripheral that can be connected to a Mac with an RGB-to-NTSC encoder like RasterOps' Video Expander board. NewTek designed the Video Toaster to run on the Amiga platform because the Amiga's frame rate matches the NTSC standard, so no scan conversion is necessary, as it would be on a Macintosh.

The Toaster allows you to manipulate live video in real time to create hundreds of digital effects including flips, spins, tumbles, slides, mirrors, splits, zooms, blinds, and digital trails. As a production switcher, the Toaster creates dissolves, wipes, and key and color effects, and it can switch between four inputs, two frame buffers, and one color-background generator. The Toaster accepts any composite video source and writes to any tape that accepts composite video. The titling software is integrated with the Toaster switcher, so it is possible to have spinning, tumbling, and zooming title screens. NewTek is adding the ability to read and write Macintosh bitmaps, some 3-D formats, and PostScript files so they can be animated or used as overlays.

The Video Toaster lists for \$1595. For more information, contact NewTek in Topeka, Kansas, at 913/354-1146.

—Fred Terry

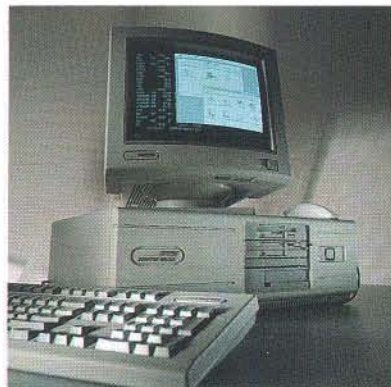
## Hydra Lets PC Users into Mac Heaven



Hydra Systems has introduced an add-in board for IBM PC XT's, PC AT's, and compatibles that lets those systems run monochrome Mac software. The

board lets you switch back and forth from an MS-DOS screen to a Mac screen just by clicking and dragging with the third button of a three-button mouse. The Mac screen slides over the DOS screen, replacing it. The user reverses the procedure to return to the same place in DOS.

The Hydra One board currently requires a user-supplied Mac ROM; Hydra says it is taking the clean-room approach to cloning the ROM for a future version of the product (see "Send in the Clones," *Macworld*, April



The Hydra One board lets PCs run Mac applications from the Finder. The board includes the ROM from a monochrome Mac.

1991). That project is probably a year away from completion, according to Hydra. To avoid legal problems with Apple, the company has licensed the Xerox Star interface, on which many Mac interface features are based.

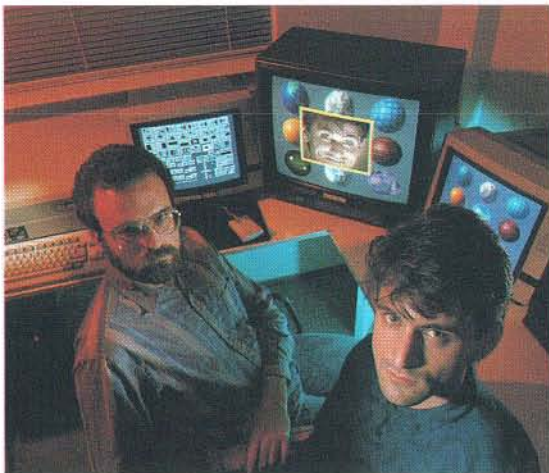
Hydra said it would begin shipping the Hydra One in February at a list price of \$995. For more information, contact Hydra in Cupertino, California, at 408/996-3880.—T.M.

## Quick-View Studio Integrates TV with Graphics and Text



E-Machines has begun shipping Quick-View Studio, a TV digitizing board and software that let you capture video sequences and integrate them into a document for playback during a presentation. The product also supports special effects and overlays, and can import images into multimedia applications such as MacroMind Director.


(continues)



Peter Tjeerdsma (left) and Daniel Kay of Elan Design. Behind them a Video Toaster shows off some special effects.

ROBERT HOLMGREN





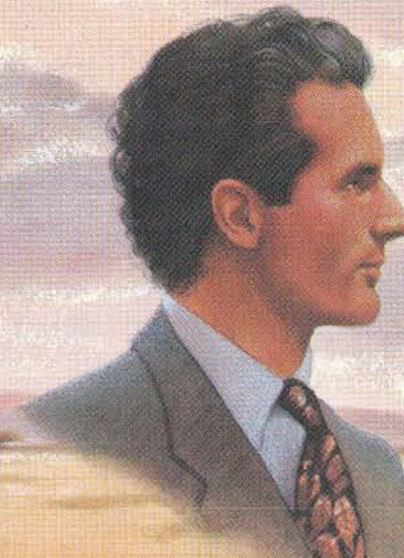
Australopithecus

*This bipedal hominid lacked the ability to remain erect for very long and relied exclusively on floppy disks – 800k was adequate storage for his limited cranial capacity.*



Homo Erectus

*The need to inventory large stone and rock collections using tapes drove this wayward creature to the brink of extinction.*



Homo Sapien

*Fortunately for modern men and women in business today – the DataPak MO from Mass Microsystems provides the most economical way to store and archive data and images of all sorts – whatever their cranial capacity.*

# Storage for Modern Times



to handle most of our every day business needs.

With the DataPak™ MO optical drive from MASS Microsystems™, you now have the one device that can handle the *critical* tasks of archiving and backup more efficiently and economically than ever before.

The DataPak MO is based on the idea that modern men and women require fast, reliable, removable and infinitely more expandable storage solutions than our less expansive ancestors. Not surprising when you consider their limited cranial capacity; and all the complexity that civilization has brought.

DataPak MO gives you the ability to quickly archive and backup all of your Macintosh® files, given that each removable DataCart™ MO cartridge provides 512MB of safe and reliable storage. All at pennies per megabyte! And with

the DataPak MO you no longer have to spend hours searching through slow tapes to access your files.

To get the complete story on how the DataPak MO has evolved as the most reliable storage on the market today, call to get the name of the dealer nearest you.

*And now you can get more storage bang for your buck! DiskDoubler™, the data compression utility by Salient™, is now shipping with every DataPak MO.*

 **MASS**  
microsystems

810 W. Maude Avenue  
Sunnyvale, CA 94086  
408/522-1200 800/522-7979  
408/733-5499 FAX

All ® registermarks and ™ trademarks are of their respective manufacturers.  
This ad developed using QuickImage™ 24 from MASS Microsystems™.  
©1991 MASS Microsystems, Inc. All rights reserved.





E-Machines' Quick-View Studio board and its software let users incorporate video sequences into documents.

Quick-View Studio comes with an impressive interface that, among other things, lets the user see up to 16 thumbnail images of sequential frames, making it easy to select the best one to incorporate in a document. The Quick-View Studio board can also save the images at different sizes and bit-depths, so the user can choose how much disk space to dedicate to a sequence.

The board supports masks and overlays on live video and can per-

form a variety of real-time special effects, such as rotations. For editing, it can show multiple live TV windows running from different video sources. E-Machines expects to ship an optional sound-digitizing module beginning in March. The sound module will work with the Sound Manager in System 6.0.7. Quick-View Studio is available now at a list price of \$2495. For more information, contact E-Machines in Beaverton, Oregon, at 503/646-0946.—T.M.

## At the Garage



I intended to spend an hour or so at the Garage, San Jose's new interactive science and technology museum. But five hours later they had to pry me away from a Mac that was showing movies of amphibious and airborne bicyclists traversing the seas and the skies.

Formally known as the Technology Center of Silicon Valley, the Garage takes its nickname from the

humble beginnings of Valley giants like Apple and Hewlett-Packard (both have been generous contributors). Its exhibits cover microelectronics, robotics, materials science, biotechnology, CAD/CAM, and space exploration.

At the Mars Rover exhibit, you can zoom down into the red planet's valleys and up over its mountains at the touch of some HyperCard buttons—with the help of computer simulation and animation based on NASA's Viking data. You can touch more buttons to learn about Mars's geography and geology, its past and future exploration, and the possibility that there are some sort of live critters up there.

After returning from Mars, you can move on to design the bike of your dreams on a CAD system that offers choices of various aerodynamic frames, wheels, gears, and handlebars—then print your design and proceed to computer simulations of its manufacture and marketing. After that, you can watch the robots in action, walk through a real microchip production facility, experiment in a biotechnology lab, or sit down at one of many Macs in an interactive multimedia lab. At the Big Chip exhibit, you can try a few calculations on a huge chip model that lights up as bits race through its transistors.

If you visit the San Francisco Bay Area, don't miss the Garage. For more information, contact the Technology Center at 145 West San Carlos, San Jose, California, 408/279-7150.

—Ann Garrison

## Self-Sensorship in Silicon Valley



In 1975 the behavior of commune farm animals helped predict a magnitude-7 quake in China. By 1995 the Macintosh and other personal computers may help us predict—or at least learn more about—earthquake activity. Since personal computers vastly outnumber livestock in the San Francisco Bay Area, seismologist Edward Cranswick figures that volunteers from the computing community could help collect earthquake data.

(continues)

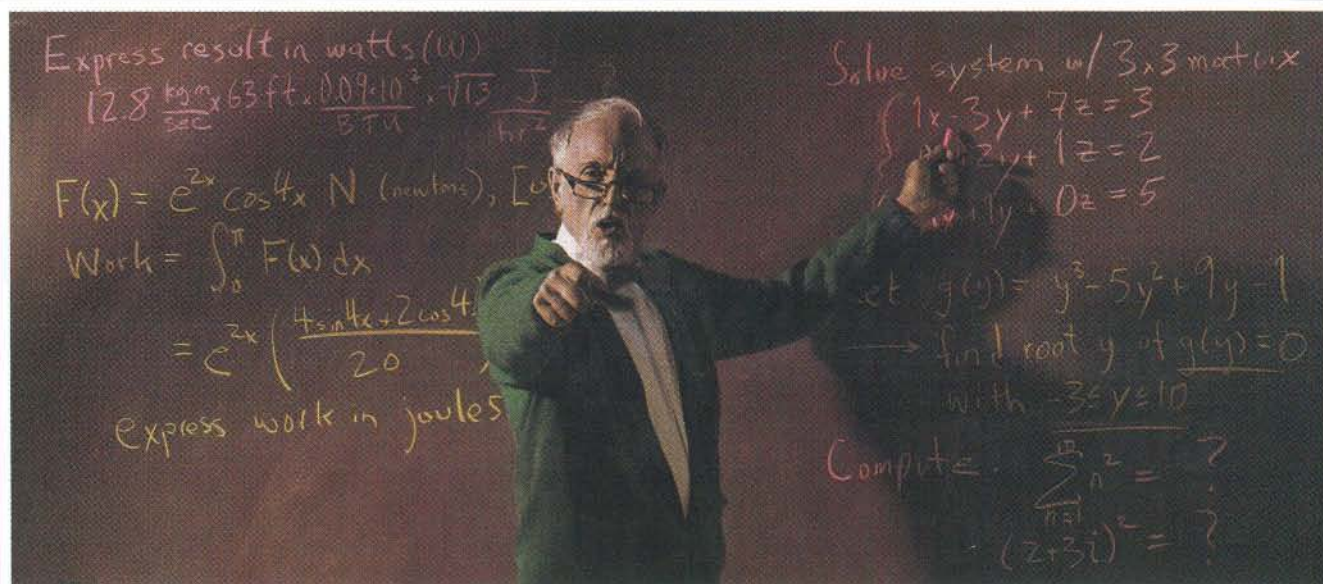


ROBERT HOLMGREN

Kids at The Garage type in commands and watch The Big Chip execute them in slow motion. In the background is the Personal Particle Counting Booth and a working clean room.



# In college, you would have killed for MathCAD. So why aren't you calculating with it now?



**100,000 engineers and scientists already let MathCAD do their calculations for them.**

Now that college is far behind you, perhaps it's time you graduated from spreadsheets, calculators and programming.

Because in today's working world of engineering and science, there's no time for anything less than MathCAD. The software that lets you perform engineering and scientific calculations in a way that's faster, more natural, and less error-prone than any calculator, spreadsheet, or program you could

write yourself.

Thanks to MathCAD's live document interface,<sup>™</sup> you can enter equations anywhere on the screen, add text to support your work, and graph the results.

It also comes complete with over 120 commonly used functions built right in. Perfect for creating complex equations and formulas, as well as exponentials, differentials, cubic splines, FFTs and matrices.

MathCAD also gives you three-dimensional plotting and vivid graphing capabilities. Even entering operators and Greek letters into equations is a snap.

Done calculating? MathCAD prints *all* your analyses in presentation-quality documents, even on PostScript<sup>®</sup> compatible printers.

All of which has made MathCAD far and away the best-selling math software in the world. In fact, it's used by over 100,000 engineers and scientists — just like you.

There's MathCAD for the Macintosh.<sup>®</sup> MathCAD for the

PC. And a Unix<sup>®</sup> version that utilizes the speed and unlimited memory of your Unix workstation.

We also have Applications Packs for Advanced Math, Statistics, Mechanical, Chemical, and Electrical Engineering. Each is a collection of adaptable mathematical models, designed to let you start solving your real world problems right away.

For a free MathCAD demo disk, or upgrade information, dial 1-800-MATHCAD (in MA, 617-577-1017). Or see your software dealer.

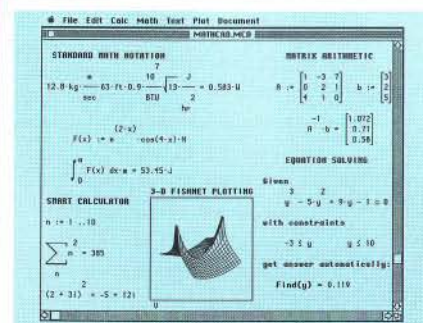


Available for Macintosh computers, IBM<sup>®</sup> compatibles, and Unix workstations. TM and ® signify manufacturer's trademark or registered trademark, respectively.

**1-800-MATHCAD**

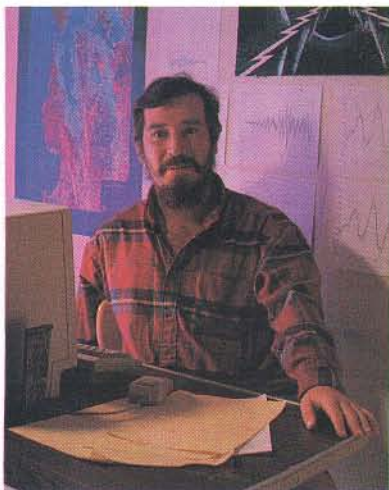
# MathCAD<sup>®</sup>

MathSoft, Inc., 201 Broadway, Cambridge, MA 02139



MathCAD takes full advantage of the Macintosh<sup>®</sup> interface, with features that make it simple to enter operators and Greek letters into equations.





PATRICIA BARRY LEVY

**If Edward Cranswick of the USGS has his way, your backyard could become part of the People's Seismographic Array.**

Cranswick, a geophysicist with the U.S. Geological Survey in Golden, Colorado, and consultant Robert Banfill have come up with a plan they call the People's Seismograph Array. In a recent meeting of the American Geophysical Union, Cranswick presented his proposal. It goes something like this. Anyone who owns a personal computer—Mac, IBM PC, or Amiga—could volunteer to set up an earthquake-monitoring system at home. The volunteer would have to pay several hundred dollars for a self-contained digital seismic data acquisition unit (SDAU). The SDAU would include a seismic activity sensor called a geophone, which would be buried in the user's yard. When a quake occurred, the unit would digitally record seismic signals and send them via a built-in modem to a USGS minicomputer located in Menlo Park, California. Seismologists could then analyze data sent in from multiple locations and augment the quake data collected through their current monitoring system.

The buried sensor would be connected not only to a modem but to the Mac's serial port as well. Information captured by the seismograph and stored in the unit's RAM could be downloaded to the computer, opened with special software, and viewed by the volunteer. (The possibility of enthusiastic amateurs mangling data would be minimal, since the SDAU's modem would automatically send

data directly to the Menlo Park computer when triggered by a quake.) Included in Cranswick's plan is a user group for volunteers to share data and summarize results in a newsletter.

Will backyard seismographs be the latest rage in Silicon Valley? Maybe so. Cranswick and his colleagues successfully used personal computers to quickly analyze data recorded during the 1989 Loma Prieta quake. With its large population of computer-owning, quake-conscious citizens, the Bay Area would be the perfect place for a seismographic computing commune. For more information, contact Edward Cranswick, U.S. Geological Service, MS #966, Box 25046, Federal Center, Denver, CO 80225, 303/236-7492.

—Erfert Fenton

## I Want My 24STV

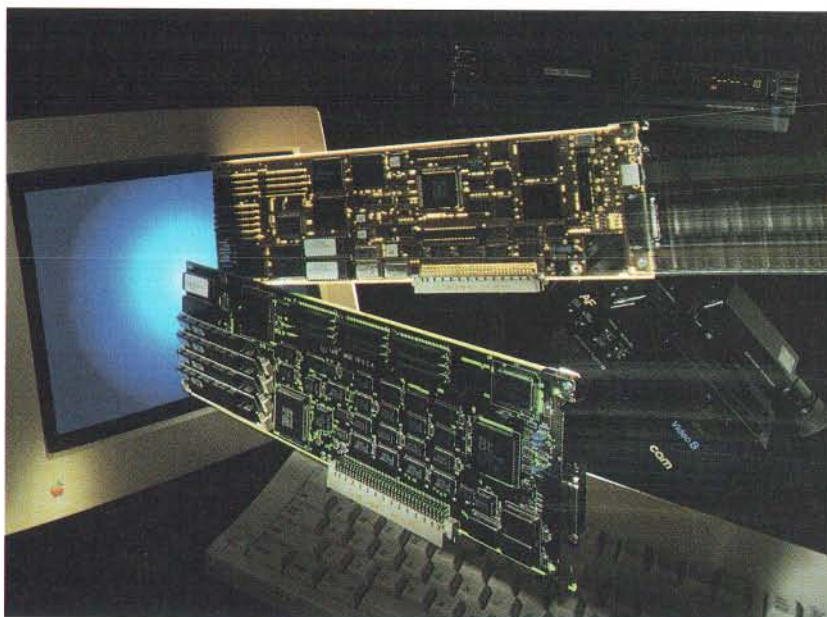


RasterOps has introduced a series of display monitors and graphics adapters including the 24STV, a single NuBus board that can combine 24-bit color, digital television input, and graphics acceleration, with video-overlay and video-compression capabilities. The company has also unveiled the 24si, a one-board combination 24-bit color adapter and accelerator for the Macintosh IIsi.

The basic 24STV board supports Apple's 13-inch monitor and includes the frame-grabbing and video-overlay features. One optional piggybacked expansion board provides the graphics acceleration, while a second optional piggybacked expansion board provides the video compression and decompression. With the options, the 24STV board can quickly capture digitized images from NTSC, PAL, SECAM, or S-Video sources, compress them, and store them on disk. The board can also overlay live video with text or graphics for presentations. RasterOps offers XCMD and X-Object software for creating the overlays. The 24STV, slated to ship in February, has a suggested retail price of \$1795. Prices had not been set at press time for the piggybacked expansion boards, which were scheduled for March availability.

The 24si, intended for the Macintosh IIsi, is a 24-bit color board that accelerates QuickDraw. The board speeds up graphics applications by as much as 600 percent, according to RasterOps. It is also designed to work with Apple's 13-inch monitor. RasterOps expected to begin shipping the 24si in February at a list price of \$1095. For more information, contact RasterOps in Santa Clara, California, at 408/562-4200.—T.M.

(continues)

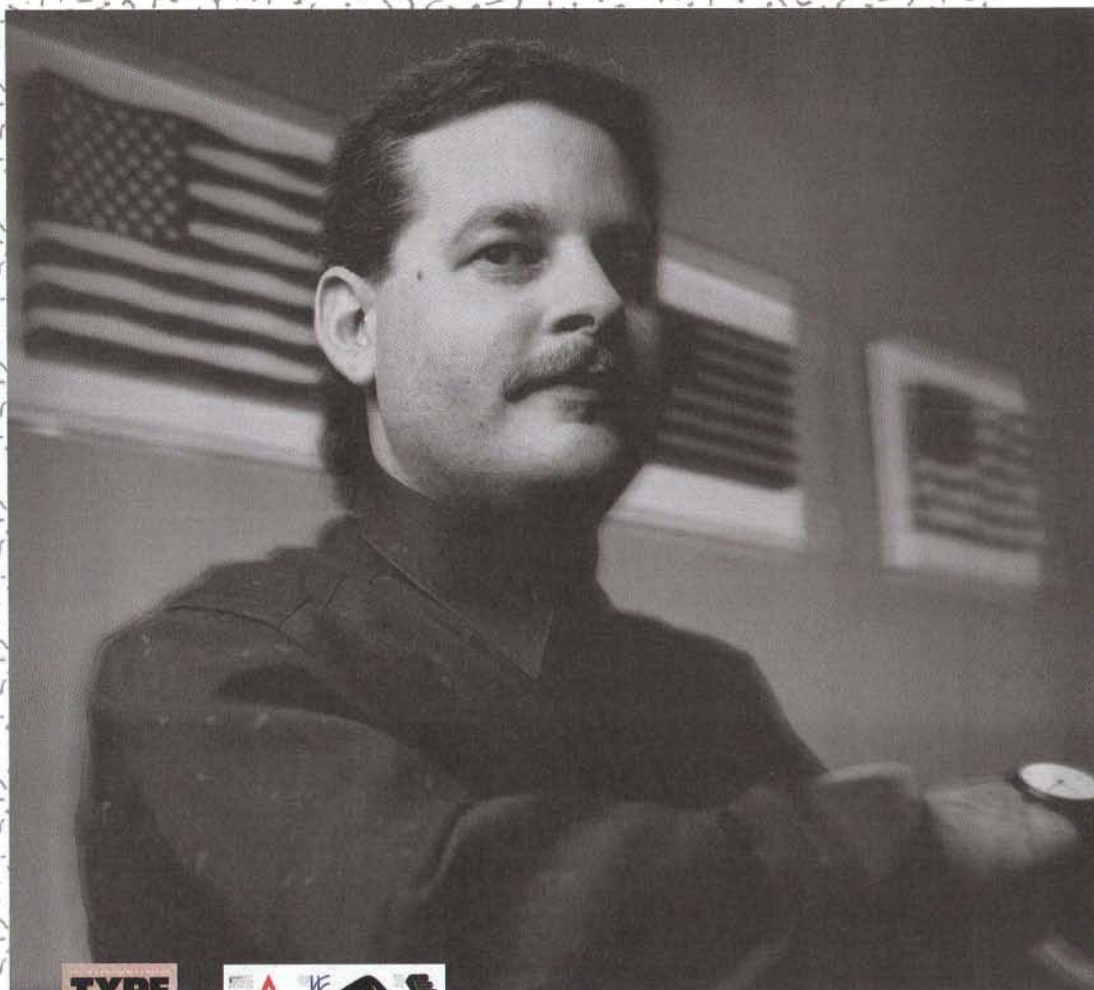


TOM GIBSON

**RasterOps has unveiled the 24STV (top), which can combine 24-bit color, digital TV input, and graphics acceleration. The 24si is a 24-bit board and graphics accelerator for the IIsi.**



"We're very particular about how type looks. That's why we use QuarkXPress."



Rick Binger, Computer Designer  
Pentagram Design, San Francisco

"Typographic precision is crucial to good design. It doesn't matter if we are working on a brochure, a magazine, or a book. We can't afford to have typographic limitations hold back a design. That's why we use QuarkXPress. Its kerning, tracking, and type handling are great. And having control over the points-per-inch setting gives us the most accurate results possible. In fact, we even used QuarkXPress to produce a book about typographic excellence — *TypeWise*, by Kit Hinrichs."

Pentagram is an international design partnership founded in 1972, with offices in San Francisco, London, and New York. The firm offers services in corporate communications, packaging, and environmental, exhibit, architectural, and product design.

If you're particular about type, visit your local dealer for more information.

**QuarkXPress®**  
The Choice for Publishing Software Worldwide





## Women of Color—In Color



Although the list of great women writers is long, men dominate in other arts, including the visual arts. Where are the female Leonardos, Rembrandts, Van Goghs, or Picassos? How many of us can name even one? Despite the current success of a few women art stars like Jenny Holzer and Cindy Sherman, women still garner only a tiny fraction



ROSA LAU

**Artist Betty Kano and multimedia designer Dana Bass. Bass's Women Artists of Color laser disc includes work by Kano.**

of the art world's attention and awards. Galleries, museums, and critics note women of color even less.

Dana Bass took a step toward eliminating this cultural blind spot by creating Women Artists of Color, an interactive, color videodisc database of Latina, Native American, Asian-American, and African-American women artists. The disc includes 800 still images, supporting text such as artists' biographies, and 25 minutes of performances by and interviews with artists, all accessed with a SuperCard interface.

Women Artists of Color was Bass's thesis project for a master's degree in Interdisciplinary Computer Science at Mills College. From the project's inception, Bass worked closely with Moira Roth, an art history professor at Mills and a champion of women artists of color. Most of the images on the disc are from Roth's slide collection of more than 1200 works by contemporary women artists of color.

A videodisc player and Macintosh II with Bass's work are permanently installed at the Mills College library in Oakland, California, where students and visitors can view it. The project, which was financed by an Apple Fellowship Grant, may eventually be published, but nothing is definite yet. For further information, contact Bass in Berkeley, California, at 415/527-4954.—Ann Garrison

## The VCR Network



Multimedia is not as easy as it sounds. Few multimedia devices—laser disc players, video decks, audio mixers—can talk to each other. And even if they could, how would you drive a whole stack of devices from the Mac's two serial ports?

ARTI (Advanced Remote Technologies Incorporated) answers these questions with two product lines, one aimed at professional multimedia developers, and a new low-end line that lets amateurs into the game for about \$100 per device.

The ProNode, the professional product, connects devices to ARTI's Token-Ring-like Arnet, which supports up to 200 devices. ARTI supplies drivers for about 70 common and not-so-common devices including tape decks, switchers, lighting controllers, and even hydraulic robots. After you download the appropriate drivers, ProNodes control the devices. (The \$995 ProNode supersedes the earlier ARM/ARCHI system, though they can coexist on a network.) The ProNode



**Diane Totura of 1st National Bank of Chicago's Telemedia Services. The bank's racks of video devices run on an Arnet.**

## VIRUS WATCH

*Current viruses, Trojan horses, and worms affecting the Macintosh community.*

### nCAM

**Type:** Virus

**First listed in Virus Watch:** 5/91

**Info:** An nVIR clone; infects applications and system files.

**Impact:** Nondestructive; can cause crashes.

### MDEF D

**Type:** Virus

**First listed in Virus Watch:** 5/91

**Info:** Infects applications and system files.

**Impact:** Nondestructive; can cause crashes.

### MODM and zero

**Type:** Viruses

**First listed in Virus Watch:** 3/91


**Info:** Both nVIR B clones; infect applications and system files.

**Impact:** Nondestructive; can cause crashes.

stores drivers in static memory, so you don't have to reload them at start-up, and can generate timing characters for cuing and dubbing. The \$1495 ProNode-V adds read-write Vertical Integral Time Code support.

ARTI's Video Publisher version 2.0, a \$695 HyperCard stack, coordinates all the devices on the Arnet and lets you access their features to do frame-accurate editing, run special-effects boxes, monitor a tape, or generate edit-decision lists. Other software, including MacroMind's Director 2.0 and MediaMaker, can also control an Arnet.

ARTI's low-end product, the MediaNode, lists for \$149. You can network up to 16 MediaNodes, each with one device such as a VHS deck, Super VHS, 8mm, Hi-8, laser disc player, or other consumer-quality device. The \$59 EditBuddy software supports creating clips, stringing them together, and writing them out to tape.

For more information about ARTI's products, call the company in Campbell, California, at 408/374-9044.—D.L. 



# Tomorrow's Upgrade For Your Mac Is Only \$59\*

**FREE!**  
STEP-BY-STEP  
VIDEO  
INSTRUCTIONS\*\*

A MacWarehouse Expansion Kit will dramatically increase the power of your Mac. And our fast, reliable overnight service will have your Kit in your hands tomorrow!

## MORE BRAIN POWER FOR YOUR MAC

Never again will you have to quit your word processor just to answer a question about a spread-sheet. Install extra memory and you can leave your letter open while you refer to last month's sales figures. You can edit those monstrous scanner files with advanced graphics applications or develop your own custom HyperCard stacks. More memory means more power at your fingertips.

## PLUG IN INSTALLATION

Adding memory doesn't require technicians in lab coats. Just open your Mac, slide out the main circuit board and plug in your SIMMS. Our FREE video will give you STEP-BY-STEP installation instructions. Every type of Mac is covered and we think we've made it a breeze.

## WHAT DO I NEED?

Our helpful sales and technical staff is standing by to answer any questions and take the mystery out of memory upgrades. Memory cards come with one megabyte on each card and are usually sold in pairs - (2 @ \$59 ea.).

The chart explains exactly what you need to achieve the desired level of performance.

To upgrade a 4-socket Mac Plus or SE to this amount of memory.	Do this: (Install in multiples of two only)
2 MB	Remove all four existing 256K SIMMS, install two 1 MB SIMMS, leave two sockets for future expansion.
2-1/2 MB	Remove only two 256K SIMMS, install two 1 MB SIMMS.
4 MB	Replace all four 256K SIMMS with four 1 MB SIMMS.
To upgrade an 8-socket Mac II, IIfx, IIfx, or SE 30 to this amount of memory.	Do this: (Install in multiples of four only.)
4 MB	Remove all four existing 256K SIMMS, install four 1 MB SIMMS, leave remaining sockets for future expansion.
5 MB	Keep existing 256K SIMMS, install four 1 MB in remaining sockets.
8 MB	Remove all four 256K SIMMS, install eight 1 MB SIMMS.

To open your Mac Plus or SE, you'll need a specially designed tool - it's available from us as part of a handy tool kit for just \$9.

## WHAT YOU NEED TO KNOW

Memory chips come factory-installed on plug-in cards, called SIMMS (Single Inline Memory Modules). Each one megabyte SIMMS card holds eight top quality, memory chips. We carry chips by all the major manufacturers like Texas Instruments, Intel and Samsung. We also carry the full line of Dove memory products.

Prices can vary a lot, based on quality, speed and demand. At press time our price for

1MB, 100ns SIMMS is \$59. Please call for the very latest prices and availability. Our sales staff will tell you what you need and help you make your choice an easy one.

## SPEED

Do you need 80, 100 or 120 Nanosecond (ns) chips? Nanoseconds are billionths of a second, so an 80 ns chip responds faster than a 100 ns chip. The original Mac used relatively slow 150 ns memory chips. The 68020 processor reads 120 ns (or faster) chip, and the 68030 Macs like the speedier model.

## OVERNIGHT DELIVERY

Place your order by 12:00 am (E), weekdays and we'll deliver overnight for just \$3.00. There's never been a better time to consider a memory upgrade. Call our toll-free number now and tomorrow morning your Mac will be off to a brand new start.

**MacWAREHOUSE**  
**1-800-255-6227**

Call toll-free

Twenty-four hours a day,  
seven days a week.

Inquiries: 1-908-367-0440

Fax: 1-908-905-9279

## MACWAREHOUSE 30-DAY MONEY BACK GUARANTEE

If, for any reason, you are dissatisfied with your MacWAREHOUSE Memory Kit, you may return it for a full refund within thirty days of purchase. All you have to do is call us for a return authorization number and return this product, postage paid, in its original condition, with the original packaging and documentation.

**ONE YEAR WARRANTY.** MacWarehouse also guarantees its Memory Kits against manufacturer defects for one year from the date of purchase. We will repair the item or replace it at our discretion.

\* SIMMS prices vary. Call for latest information.

\*\* Limited Offer! Free video with purchase of 2 or more SIMMS.

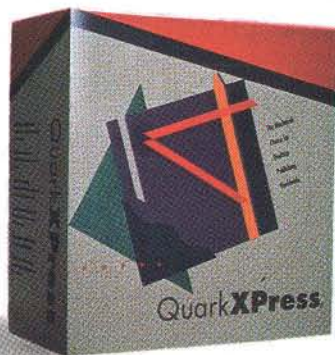


# The Professional's Choice

## QuarkXPress 3.0

### only \$519

QuarkXPress® has long been the professional's choice for publishing software worldwide because of its powerful and precise type handling, page layout, and graphics production features. The new 3.0 version delivers all these, with a redesigned interface and clear, comprehensive documentation that make QuarkXPress easier than ever to use.



#### **Interactive and Effective**

QuarkXPress 3.0 provides an array of interactive palettes that make it simple for new and experienced users alike to create effective, high-quality publications. A document layout palette enables you to insert, delete, and move pages easily by dragging page icons. And the new Library palette provides an easy way to store text and graphic items for use whenever they're needed.

#### **Text Creation Simplified**

QuarkXPress offers full-featured WYSIWYG word processing and editing capabilities that give you the look and feel of your document while you're creating it. The Global Spelling Check and Find/Change features make fine-tuning easy.

#### **A Tradition of Precise Type Handling**

QuarkXPress 3.0 continues a tradition of providing the most precise, flexible type handling of any comparable program. You can adjust font, size, style, leading, location, and angle of rotation in fractions of degrees, right on the screen. Whether you're creating automatic drop caps or editing already-rotated type, QuarkXPress 3.0 delivers the power and freedom you need to create the most eye-catching text possible.

#### **The Designer's Choice**

Because of the power and responsiveness of its page layout features, QuarkXPress is now the top choice of designers around the world. The program's advanced capabilities — including the rotation and skewing of graphics, picture box reshaping, rotation of text, and the creation of bleeds — make QuarkXPress the most flexible page layout program around.

#### **Complete Control Over Color**

With QuarkXPress, you can apply process or spot colors to any EPS graphic. What's more, you can create color separations without resorting to an add-on program. Besides supporting the

PANTONE MATCHING SYSTEM®, as well as RGB, CMYK, and HSB models, version 3.0 provides precision controls for trapping and other sophisticated prepress effects.

#### **Easy To Learn And Use**

Even if you've never used QuarkXPress before, you'll find this 3.0 version simple to learn and explore. The handy on-line Help system and clearly written user manuals that come with the program—in addition to the step-by-step, self-paced tutorial—quickly put you in charge of the most powerful publishing tool of its kind.

#### **Overnight Delivery Only \$3.00**

QuarkXPress 3.0 is available now — and you can have it tomorrow. Order before 12:00 midnight (E.S.T.) and we'll ship overnight for only \$3.00. When it comes to getting the newest products at the best prices, nobody beats MacWAREHOUSE — nobody!

#### **QuarkXPress 3.0**

Item #DTP 0049 FaxFACTS 2509  
Publisher: Quark, Inc.



#### **MacWAREHOUSE Low Price:.....\$519**

**System Requirements:** The enhanced QuarkXPress 3.0 requires a Macintosh Plus, SE, or II series with a 6.0 or later operating system, 2MB of RAM (extra memory required for color or graphics-intensive applications), a hard drive, and a LaserWriter 5.2 or 6.0 printer.

# MacWAREHOUSE®

## 1-800-255-6227

Call toll-free twenty-four hours a day,

seven days a week.

Inquiries: 1-908-367-0440

Fax: 1-908-905-9279

© 1991 MicroWarehouse Inc.

**MWE1Q**

\*Pantone, Inc.'s check-standard trademark for color reproduction and color reproduction materials. Quark and QuarkXPress are registered trademarks of Quark, Inc.



**OVERNIGHT DELIVERY**  
**ONLY \$3.00**  
(See details below)

**GUARANTEE**

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.

### Adobe Type On Call Library on CD-ROM (Adobe Systems)

The entire collection of Adobe Fonts and more on one CD-ROM disk! Each font is password protected; to unlock the font you need, simply call MacWAREHOUSE, pay the purchase price and we give you the password right over the phone. No more waiting for packages to arrive — your new font is available to you immediately! You can choose to purchase an entire type family, or just the particular typeface you need. Purchase price of the CD-ROM disk includes two free fonts and Adobe Type Manager. **\$49. FON 0351**

### Sony

MED0031	Disks - 1.44 Mb High Density (3.5) .....	24.
MED0003	Disks - DS/DD (box of 10) .....	13.
<b>Targus, Ltd.</b>		
ACC0251	Imagewriter II Carry Case (black) .....	49.
ACC0438	MacIIcx/ci Carrying Case - Black .....	79.
ACC0252	MacPlus/SE Carrying Case (black) .....	65.
ACC0250	MacPlus/SE - Ext Keyboard Carrying Case .....	79.
ACC0482	Premier Leather Case .....	185.

### After Dark 2.0

(Berkeley Systems)

After Dark 2.0 prevents screen burn-in—and does it with style. In fact, any style you choose, including lightning bolts, meteors, abstract art, crawling worms, a jump to light speed, or a basic dimmer. New modules include a special version of Fish!, plus Flying Toasters, Super Nova, and Spotlight. Many modules now include sound effects. A major enhancement is System IQ, which monitors activity so that After Dark won't slow down long file transfers, database sorts, or backups. **\$24.**

### UTI 0119

#### Nolo Press

BUS0133	For The Record 2.0 .....	31.
BUS0132	WillMaker 4.0 .....	37.

#### Peachtree

FIN0059	At Once! .....	285.
---------	----------------	------

#### Reality Technologies

FIN0068	WealthBuilder (Mac) .....	145.
---------	---------------------------	------

#### Softsync/BLOC Publishing

FIN0048	Accountant Inc. Professional .....	345.
---------	------------------------------------	------

#### Softview

FIN0090	itX Personal Tax Analyst .....	59.
FIN0097	MacInTax 1040 - 90 .....	59.

#### Teleware, Inc.

FIN0087	M.Y.O.B. 2.0 .....	145.
---------	--------------------	------

## ACCESSORIES

### American Power Conversion

ACC0411	110 SE UPS .....	239.
ACC0451	370ci UPS .....	399.

### Apple

ACC0336	Toner Cartridge - LaserWriter II .....	105.
---------	----------------------------------------	------

### Basic Needs, Inc.

ACC0356	Dust Cover - Mac II & Extended Keyboard (grey nylon) .....	12.
---------	------------------------------------------------------------	-----

ACC0348	HardTops ImageWriter II Cover .....	16.
ACC0347	HardTops Mac Extended Keyboard Cover .....	15.
ACC0345	HardTops Mac Plus Keyboard Cover .....	15.
ACC0346	HardTops Mac Standard Keyboard Cover .....	15.
ACC0466	MacIIcx/ci Monitor Stand .....	49.
ACC0351	Utility Pac .....	11.

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----

ACC0351	Utility Pac .....	11.
---------	-------------------	-----



### MacPro Plus (Key Tronic)

Key Tronic's new MacPro Plus keyboard is compatible with all Macintosh computers. The enhanced 105-key layout includes Period/Comma lock capability, an interchangeable Caps Lock and Ctrl keys. Also, the connecting cable you need is offered at no extra charge. The keyboard is backed by a limited lifetime warranty and unlimited toll-free product support. Includes offer for Tempo II, a keyboard macro package from Affinity Microsystems a \$149.95 value FREE! **INP 0156 \$145.**

## ACCOUNTING & PERSONAL FINANCE

### Aatrix Software

FIN0050	Checkwriter II 3.1 .....	32.
FIN0041	Payroll 3.5 .....	109.
FIN0113	Ultimate Payroll .....	189.

### Absolute Solutions, Inc.

FIN0086	Computerized Classic Accounting .....	225.
---------	---------------------------------------	------

### Checkfree Corporation

FIN0088	CheckFree .....	21.
---------	-----------------	-----

### ChipSoft

FIN0114	TurboTax Personal 1040 .....	50.
---------	------------------------------	-----

### Computer Associates

FIN0044	ACC PAC Bedford Simply Accounting 1.1 .....	139.
---------	---------------------------------------------	------

### Inman

BUS0016	Business Plan Tool Kit .....	99.
FIN0013	Business Sense 1.3 .....	129.

### Intuit

FIN0043	Quicken 1.5 .....	45.
---------	-------------------	-----

### Meca

FIN0039	Andrew Tobias' Managing Your Money 4.0 .....	135.
---------	----------------------------------------------	------

### SmartBundle (T/Maker)

Includes four outstanding applications to make life easier, especially for new Mac owners. Each has won a MacUser Eddy Award. The word processor, WriteNow 2.2, combines ease of use with high performance (spelling checker, thesaurus, mail merge, footnotes). The spreadsheet, Full Impact 1.1, crunches your numbers and displays them in attractive charts. SuperPaint 2.0 combines drawing with a paint program, plus an AutoTrace tool. RecordHolder Plus is perfect for keeping names and addresses, invoices, and sales call records. **\$215. BUS 0152**

## BUSINESS & PRESENTATION

### A Lasting Impression

BUS0086	ResumExpert Cover Letters .....	49.
BUS0130	Arts & Leisure .....	49.
BUS0107	Computer Science & Engineering .....	49.
BUS0110	Education .....	49.
BUS0108	Financing & Banking .....	49.
BUS0109	Health Care .....	49.
BUS0102	Manager Edition .....	49.
BUS0103	Sales & Marketing Edition .....	49.
BUS0087	ResumExpert (Word 3.0/4.0 version) .....	49.

### Abacus Concepts

STA0008	StatView II 1.03 .....	279.
STA0010	StatView SE-Graphics 1.03 .....	199.
STA0022	SuperANOVA (MacII Family) .....	309.

### MacPlus/SE- with Extended Keyboard Carrying Case (Targus)

Pamper your Mac with a Targus case made of Zilicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. Cushioned shoulder pad and handles provide extra comfort and convenience. There's room for everything from your Mac including the new Macintosh Classic, a hard disk drive, and the extended keyboard to pockets for your mouse, floppies, cables, and pens. **ACC0250 \$79.** Full Mac line available in black. Some styles available in blue, burgundy, and platinum. Premier Leather Case available (black) **\$185. ACC 0482**

### Abbott Systems, Inc.

BUS0131	Cheshire 1.0 .....	63.
---------	--------------------	-----

### Acius

DAT0045	4th Dimension 2.1 .....	439.
---------	-------------------------	------

### AEC Management Systems

BUS0129	FastTrack Schedule 1.5 .....	139.
DAT0055	AEC Information Manager .....	409.

### After Hours

DAT 0076	TouchBASE .....	89.
----------	-----------------	-----

### Aldus

BUS0066	Persuasion 2.0 .....	329.
---------	----------------------	------

### ASD Software, Inc.

BUS0134	Planisoft .....	195.
BUS0146	Planisoft - 5 pack .....	579.
BUS0147	Planisoft - 10 pack .....	839.

### Ashton-Tate

DAT0042	dBase Mac .....	SPECIAL! 59.
BUS0054	Full Impact 1.1 .....	SPECIAL! 59.

### Avery

ACC0489	MacLabelPro .....	49.
	Index Maker .....	From 12-18.
	Ready Index .....	From 1.50-3.00

### Baseline Publishing

BUS0149	1 Shot Worksheet .....	59.
---------	------------------------	-----

### Casady & Greene, Inc

DAC0010	QuickDex .....	36.
---------	----------------	-----

### CE Software

BUS0135	Alarming Events .....	85.
GRA0070	CalendarMaker 3.0 .....	31.

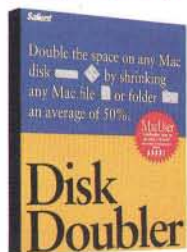
### Claris

DAT0064	FileMaker Pro .....	218.
BUS0058	MacProject II 2.1 .....	365.
BUS0065	SmartForm Designer .....	289.





# FROM MacWAREHOUSE



## Disk Doubler 3.1

Compresses your files when saved and expands them when opened. Shrinks any file an average of 50%. It's like getting a new hard disk at a fraction of the cost. Version 3.1 retains icons of the original document, making DiskDoubler even easier to use. Works with documents, applications and more. **\$45 UTI 0179**



## Empower I & Empower II

Empower I is a "front line" security software system that controls and monitors use of the Mac. Empower II provides resource access controls at the folder level and multi-user privileges for increased security. Each features access logging, controls for disabling floppy drives and hard disk protection.

**Empower I-\$89. UTI 0166**  
**Empower II-\$155. UTI 0146**



## 9600 Plus Modem

The only V.32 Data Modem that gives you the ability to send and receive faxes using a 9600 Data Modem and a 9600 Send/Receive Group III Fax. Comes with MacKNOWLEDGE (TM) communications software. **\$699 MOD 0052**



## Design Your Own Home: Architecture or Interiors

Design your home from a library of sample plans that calculate distances, diagonals, areas, and angles, then create the interior with a showcase of hundreds of furniture shapes arrangeable in eight different views. When finished just print and begin building. **\$65. ea.**

<b>Letrastet</b>		
FON0086	LetraStudio	275.
<b>Multi Ad Services</b>		
DTP0042	Multi Ad Creator 2.5	695.
<b>Post Craft</b>		
DTP0062	Effects Specialist	115.
DTP0063	Layouts	85.
<b>Quark, Inc.</b>		
DTP0028	QuarkStyle	189.
DTP0049	XPress 3.0	519.
<b>Silicon Beach</b>		
DTP0040	Personal Press	199.
<b>TimeWorks</b>		
DTP0048	Publish It! Easy 2.0	145.

## DISK DRIVES & BOARDS

<b>Applied Engineering</b>		
DR10287	AE HD Mac Drive	245.
INP0148	QuadraLink	215.
<b>Computer Friends</b>		
GRA0251	ColorSnap 32 Plus	649.
<b>Cutting Edge</b>		
DR10042	800K Floppy Disk Drive	149.
DR10157	20 meg Under the Mac Drive	329.
DR10158	30+ meg Under the Mac Drive	389.
DR10162	45 Mb Removable Hard Drive (Syquest)	669.
DR10159	45+ meg Under the Mac Drive	449.
DR10160	60+ meg Under the Mac Drive	489.
DR10161	80+ meg Under the Mac Drive	539.
<b>Dayna Communications, Inc.</b>		
DR10174	DaynaFile dual 360K (5.25) & 1.44 (3.5)	749.
DR10104	DaynaFile single 360K (5 1/4)	499.
<b>Fujitsu</b>		
DR10186	800K Disk Drive - Fujitsu	99.
<b>Kennetech Technology</b>		
DR10218	Drive 1200	259.
DR10141	Drive 2.4	329.
DR10219	Drive 360 (5.25 in. floppy disk drive)	259.
DR10140	Rapport	199.
<b>Mass Microsystems</b>		
DR10256	DataPak MO 512 MB	
	Read-write/optical	3425.



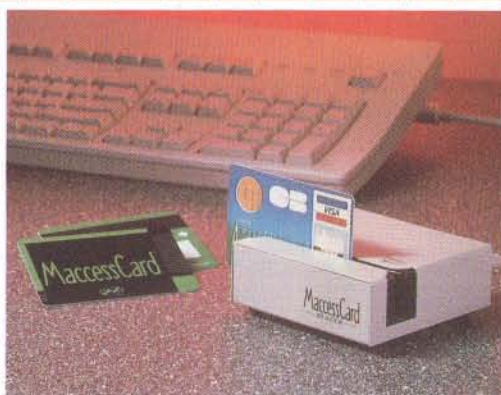
## Scan 300/Color (Abaton)

This 24-bit color and grayscale scanner provides the image scanning power of the future without sacrificing the standards of today. It is capable of scanning color, grayscale, halftone and line art images in resolutions ranging from 72 dpi to 300 dpi. Works in both Macintosh and IBM environments with most popular graphics and OCR packages. Comes with Interface Kit and Adobe Photoshop. **\$1899. INP 0157**

GRA0243	QuickImage 24 Video Frame Grabber - II Call.	
<b>Micron Technology</b>		
DR10187	Xceed 8-bit Video Card NB6-48	349.
DR10236	Xceed IICI - 128 Cache Card	249.
<b>MicroTech International, Inc.</b>		
DR10294	Athena A100 100 Meg Drive	899.
DR10293	Athena A50 50 Meg Drive	599.
DR10311	Europa 100 Meg Drive	699.
DR10308	Europa 20 Meg Drive	349.
DR10309	Europa 40 Meg Drive	399.
DR10310	Europa 80 Meg Drive	599.
DR10307	MicroTech R50 50 Meg Removable	979.
DR10304	Nova N40 40 Meg Drive	565.
DR10305	Nova N80 80 Meg Drive	745.
<b>Optical Access International</b>		
DR10251	Access CD	789.
DR10252	Access MF	3995.
MED0036	Access MF Rewritable Optical Cartridge	239.
<b>Peripheral Land, Inc.</b>		
DR10193	Infinity Dual 40Mb Removable	1875.
DR10115	Infinity Turbo 40 Meg Removable	799.
DR10154	Turbo Floppy 1.4 Drive	359.
<b>PowerUser™</b>		
DR10201	20 Meg External Hard Drive	329.
DR10202	30 Meg External Hard Drive	349.
DR10206	44 Meg Removable	599.
DR10203	40 Meg External Hard Drive	349.
DR10204	60 Meg External Hard Drive	449.
DR10205	80 Meg External Hard Drive	499.

## MacaccessCard Reader (ASD)

The MacaccessCard Reader requires FileGuard 2.5 software. The software can be configured so that without a registered MacaccessCard or the combination of a MacaccessCard and an access key, no one can gain access to your Mac. Cards packaged with the reader can be used or the system can be trained to recognize any ID card (Visa, company or student ID card). **ACC 0539 \$319. See line listings for FileGuard 2.5.**



## EDUCATIONAL & INSTRUCTIONAL

<b>Beacon Technology, Inc.</b>		
HYP0034	HyperBible International Version 2.0	129.
HYP0035	HyperBible King James Version 2.0	129.
<b>Broderbund</b>		
EDU0170	The Playroom	29.
<b>Davidson &amp; Associates</b>		
EDU0037	Math Blaster	29.
EDU0118	Math Blaster Mystery	29.
<b>Help Software, Inc.</b>		
EDU0108	Desktop Help for Excel	52.
<b>HyperGlot Software Company</b>		
	Pronunciation Tutor w/ Sound:	
	Chinese, French, German or Spanish	ea. 39.
	Tense Tutor:	
	French, German, Spanish or Italian	ea. 39.

	Verb Tutor w/ Sound:	
	French, German, Spanish or Italian	ea. 39.
	Word Torture: French, German, Italian, Russian or Spanish	ea. 29.
EDU0246	Easy Kana - Japanese	129.
EDU0245	RefBase	105.
<b>Learning Company</b>		
EDU0084	Math Rabbit	30.
EDU0048	Reader Rabbit 2.0	30.
<b>MicroMaps</b>		
GRA0229	MapArt PICT Format	99.
GRA0228	MapArt EPS Format	99.
<b>Nordic Software</b>		
EDU0142	MacKids Preschool Pack	36.
<b>Penton Overseas (Full line available)</b>		
	VocabuLearn Level I or II: French, German, Hebrew, Italian, Japanese, Russian or Spanish	ea. 35.
<b>Personal Training Systems (Full line available)</b>		
	Macintosh	52.
	HyperCard	52.
	FileMaker Pro	52.
	Microsoft Excel	52.
	Microsoft Word	52.
	Aldus PageMaker 4.0	52.
	Aldus FreeHand 2.0	52.
	Aldus Persuasion	52.
	Quark XPress 3.0	52.

<b>Queue</b>		
EDU0161	Computer SAT Prep	29.
<b>Visionary Software</b>		
EDU0207	LifeGuard	49.
EDU0209	Synchronicity 2.5	49.
<b>Voice &amp; Video</b>		
	Getting Started Video: Excel 2.2, PageMaker 4.0, Word 4.0	ea. 39.
	Advanced Techniques Video: Excel 2.2, PageMaker 4.0, Word 4.0	ea. 39.
EDU0063	HyperCard Getting Started Video	39.
<b>Zondervan Publishing House</b>		
BOK0022	MacBible - Greek	99.
BOK0021	MacBible - King James Version	59.
BOK0020	MacBible - New International Version	59.

## ENTERTAINMENT

<b>Artworx</b>		
ENT0303	Bridge 6.0	29.
<b>Baseline Publishing</b>		
ENT0351	Talking Moose	23.
<b>Broderbund</b>		
ENT0259	Shufflepuck Cafe	25.
	Where is Carmen Sandiego?	ea. 29.
<b>Bulls City Software</b>		
ENT0308	Moriarty's Revenge	35.
<b>Bullseye</b>		
ENT0045	Ferrari Grand Prix 1.6	31.

## Pocket Mouse (Asher)

Pocket Mouse uses a sophisticated, accurate, patented encoder technology found in aerospace instruments. Provides a 400 DPI resolution and features a lock button for dragging. **\$49 INP 0158**

## Turbo Trackball

Get precise fingertip control in a space saving, ergonomic package design. Turbo Mouse offers twice the speed and accuracy in half the space. Both Pocket Mouse and Turbo Trackball come with manufacturer's lifetime warranty. **\$59 INP 0051**





# GUARANTEE

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.

# OVERNIGHT DELIVERY ONLY \$3.00

## THINK C

(Symantec Corporation)

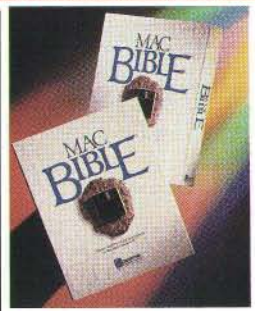
THINK C version 4.0 is the ultimate C environment. It takes programmers from idea to finished product faster than any other development environment of the Macintosh. THINK C version 4.0 is the only C development environment on the Macintosh that supports object-oriented programming, even in the source-level debugger. The new THINK Class Library provides the building blocks to implement a standard Macintosh user interface, so programmers can quickly leverage the advantages of object-oriented programming. **\$165. LING 0001**

## Broderbund

GRA0156	TypeStyler	119.
Dubi-Click		
FON0081	MenuFonts 3.0	31.
<b>Pacific Data Products</b>		
INP0138	Pacific MacPage	425.
<b>Post Craft</b>		
DTP0062	Effects Specialist	115.
<b>QMS</b>		
UTI0169	UltraScript	119.
<b>Tactic Software</b>		
FON0265	ArtFonts	50.

## Altsys

FON0284	Metamorphosis v. 2.0	89.
<b>Baseline Publishing</b>		
GRA0242	Color MacCHEESE	59.
<b>Bright Star Tech, Inc.</b>		
GRA0161	interFACE	249.
<b>Claris</b>		
CAD0029	ClariscAD 2.0	649.
GRA0258	MacDraw II	289.
GRA0117	MacPaint 2.0	92.
<b>Creative Software</b>		
GRA0240	Easy Color Paint 2.0	47.
<b>Deneba Software</b>		
GRA0075	Canvas 2.1	189.
GRA0187	UltraPaint	125.
<b>Dream Maker</b>		
GRA0105	Cliptures Vol 1 Business Images	69.
GRA0124	Cliptures Vol 2 Business Images	69.
GRA0219	Cliptures Vol 3 Sports	69.
GRA0101	MacGallery (Hypercard version)	27.
GRA0102	MacGallery (MacPaint version)	27.
<b>Electronic Arts</b>		
GRA0106	Studio/8	189.
GRA0231	Studio/32	449.
<b>Farallon™ Computing</b>		
GRA0221	MediaTracks™	189.
GRA0222	MediaTracks™ Multimedia Pack	319.
<b>Graphsoft</b>		
CAD0024	Blueprint	219.
CAD0030	MiniCAD+ 3.0	595.
<b>Innovative Data Design</b>		
CAD0028	MacDraft 2.0	193.
GRA0104	Dreams 1.1	429.



## MacBible - New International Version

Revolutionize the way you study the Scriptures. Ideal for students, pastors, and scholars. Characteristics include a flexible word-and-phrase search mode, a verse mode for displaying any range of verses, and a count mode for showing statistical information about words. **\$59. BOK 0020**



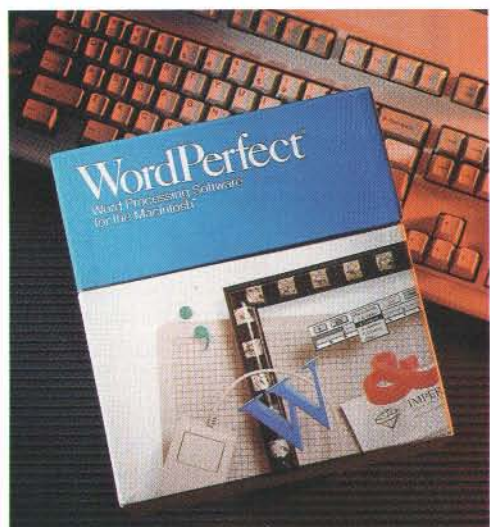
**DoveFax Desktop**  
Turn your Mac into a multi-featured personal fax equipped to send and receive letters and documents anywhere in the world. DoveFax works quietly behind the scenes, automatically answers and receives faxes without interruption and redials until your fax has been sent. Combines a 9600 baud fax modem and 2400 baud data modem. **\$299. MOD 0038**



**Metamorphosis Professional v. 2.0**  
The ultimate font conversion utility. Feature enhancements include conversion to PICT outlines, automatically hinted TrueType (Mac and PC), and PC PostScript Type 1. Also, generation of EPS and conversion of Type 3 to hinted Type 1 for use with ATM. **\$89. FON 0284**

## WordPerfect 2.0 for the Macintosh (WordPerfect)

Taking full advantage of the Macintosh interface, WordPerfect 2.0 is easy to use and completely compatible with industry standards. Features include improved graphics handling, drawing and editing capabilities, styles, newspaper and parallel columns, macros and macro editor, borders, sort, merge, 115,000-word spellchecker/thesaurus, search and replace and table of authorities. Other features include a Ruler with pop-up menus, Language Support and a file conversion utility that lets you transfer documents. **\$299. WRD 0041**

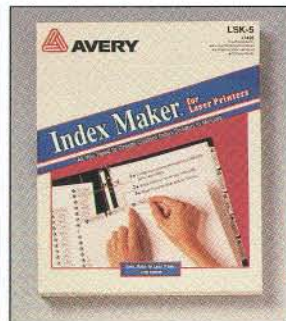
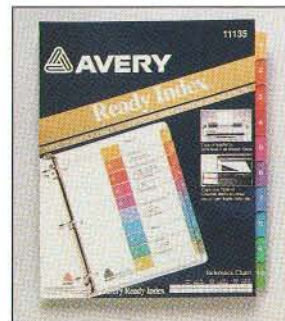


## Index Maker (Avery)

Create professional-quality customized index dividers with your Laser Printer. Enables the individual to create indexes with tab titles and graphics. Includes 5 sets of blank-tab indexes and 3 sheets of clear laser printer labels. **From \$12-\$18.**

## Ready Index

Produce efficient indexes for better organization on heavy-duty, clear-reinforced pages with colored and numbered tabs corresponding to a colored and numbered table of contents. Just type or write on the master and use a copier machine to duplicate additional. **From \$1.50-\$3.00.**



## The Software Toolworks

ENT0281	Chessmaster 2100	32.
ENT0278	Life & Death	32.
ENT0269	The Hunt For Red October	20.
<b>Three-Sixty</b>		
ENT0323	Sands of Fire	32.
<b>Toyogo</b>		
ENT0270	Go Master 4.7	45.
ENT0326	Nemesis Deluxe	95.
<b>XOR Corporation</b>		
ENT0274	MacGolf Classic	52.
ENT0330	MacSki	40.
ENT0212	NFL Challenge	55.

## Fonts & Applications

<b>Adobe Systems, Inc.</b>		
FON0264	Adobe Type Manager 2.0	55.
FON0351	Adobe Type On Call	NEW! 49.
	Adobe Type Set 1 or 2	ea. 65.
FON0326	Adobe Type Set 3	135.
	Smart Art I, II, III or IV	ea. 65.
DAC0028	TypeAlign	65.
FON0295	Adobe Type Reunion	38.
<b>Altsys</b>		
FON0183	Art Importer 2.0	89.
FON0014	Fontographer 3.2	269.
FON0284	Metamorphosis 1.5	89.

## TeleTypesetting

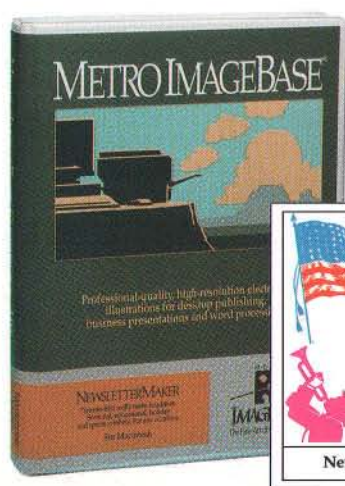
FON0343	T-Script	92.
FON0357	T-Script Basic	55.

## Graphics & Multimedia

<b>3G Graphics</b>		
GRA0188	Images with Impact! Accents & Borders 1	65.
GRA0111	Images with Impact! Business 1	65.
GRA0089	Images with Impact! Graphics	50.
<b>Abracadabra</b>		
CAD0032	Design Your Own Home-Architecture	65.
CAD0033	Design Your Own Home-Interiors	65.
<b>Adobe Systems, Inc.</b>		
DTP0054	Illustrator 3.0 (w/ ATM 2.0)	349.
GRA0125	Streamline 2.0	129.
GRA0191	PhotoShop	499.
<b>Aldus</b>		
GRA0264	Freehand 3.0	425.

## Electronic Clip Art (Metro ImageBase)

Communicate more effectively with fabulous art and graphics from the world's largest publisher of clip art. Each of the 18 ImageBase packages contains at least 100 topic-related images drawn by professional artists. (digitized at 300dpi or in EPS format). **\$85. ea.**







access our on-line store, select "JUMP" from the menu and type "MacWarehouse."

# MacWAREHOUSE

## 1-800-255-6227



### ULTRA96 With Smartcom II (Hayes)

Hayes combines the V-series ULTRA Smartmodem 9600, modem cable, transformer, telephone cable, Smartcom II and Hayes Connect software giving you the finest in high-speed, automated communications, with modem sharing capabilities over AppleTalk networks. Included is a V-series cable to allow you to go from carton to communication quickly. **\$929. MOD 0059**

### Hewlett Packard

INP0096 HP DeskWriter - 2279A ..... 759.

### MegaGraphics

MON0015 8-bit 19" Hi-Res Greyscale for Mac II ..... 1895.  
MON0016 8-bit 19" Hi-Res Greyscale for SE/30 ..... 1899.  
MON0006 Rival System for Mac II ..... 1199.  
MON0008 Rival System for Mac SE ..... 1199.  
MON0007 Rival System for Mac SE/30 ..... 1199.

### Seikosha

INP0041 Seikosha SP 2000 AP Printer ..... 235.

### Sharp

COMP007 Wizard OZ 7000 (32KRam) ..... 229.  
COMP018 Wizard OZ 7200 (64KRam) ..... 255.

### ThunderWare

INP0116 LightningScan 400 ..... 385.  
INP0007 ThunderScan Plus ..... 199.

## INPUT & OUTPUT

### Abaton

INP0157 Scan 300/Color ..... 1899.  
INP0130 LaserScript Printer ..... 1999.

### Letraset

GRA0151 ColorStudio ..... 649.  
DTP0019 ImageStudio 1.5 ..... 139.

### MacroMind

GRA0140 MacroMind Director 2.0 ..... 519.

### Metro Image Base

Full Line Available ..... ea. 85.

### Paracomp

GRA0235 FilmMaker ..... 439.  
GRA0233 Swivel 3D Professional ..... 439.  
GRA0234 SwivelArt ..... 82.

### Praxitel

UT0211 Read My Lips ..... 75.

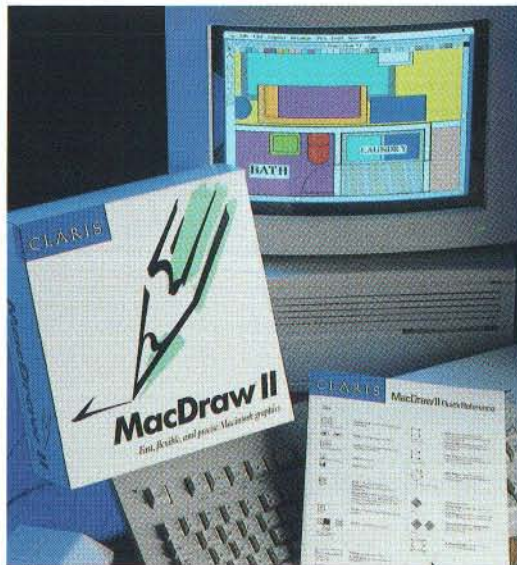
### Preferred Publishers

GRA0239 Master Color ..... 99.



### MacPrint 1.2

Easy-to-use software utility that lets you use most Mac applications with any HP LaserJet, DeskJet or compatible printer including the Series III. Prints text and graphics at the printer's maximum resolution, but does not support Postscript. Cable is included. **\$95. UTI 0098**



### MacDraw II 1.1 (Claris)

Create a variety of graphics in addition to regular drawings. Use it for simple Desktop Publishing projects (fliers, invitations, business forms). Make desktop presentations. Create illustrations, logos, and maps. Or design floor plans, landscapes, and products. MacDraw II prints everything from E size documents to color 35mm slides, and generates four-color separations. Comes with FREE MacPaint 2.0 and custom clip art. FREE upgrade to MacDraw PRO. A \$349 value. **GRA 0258 \$298.**

GRA0238 Master Paint ..... 51.  
**Silicon Beach**  
GRA0092 Digital Darkroom 2.0 ..... 259.  
GRA0131 Super 3D 2.1 ..... 339.  
HYP0027 SuperCard 1.5 ..... 199.  
GRA0112 SuperPaint 2.0 ..... 135.

### Solutions, Inc.

DAC0002 SmartScrap & The Clipper 2.01 ..... 56.

### Strata

GRA0176 StrataVision 3D ..... 375.

### Strategic Mapping, Inc.

GRA0227 Atlas MapMaker 4.5 ..... 369.

### Studiotechnics

GRA0189 Colorset 1.5 ..... 229.

### SuperMac

GRA0109 PixelPaint 2.0 ..... 225.

GRA0249 PixelPaint Professional 2.0 ..... 465.

### T/Maker Co.

GRA0209 ClickArt Business Cartoon ..... 33.

GRA0039 ClickArt Business Image ..... 32.

GRA0088 ClickArt EPS Illustrations ..... 82.

### Zedcor

GRA0199 DeskPaint 3.3 ..... 115.

### Asher Engineering

INP0051 QuadLynx Trackball ADB(SE/II) ..... 59.

INP0158 Pocket Mouse ..... 49.

### Calcomp

INP0102 The Wiz Pen ..... 57.

INP0098 The Wiz Tablet ..... 159.

### CH Products

INP0121 RollerMouse ADB ..... 75.

### Curtis

INP0141 MVP Mouse ..... 89.

### Datadesk International

INP0097 DataDesk Switchboard ..... 159.

INP0047 Mac 101 Keyboard SE/II ..... 129.

### Digital Vision, Inc.

GRA0145 Computer Eyes B & W ..... 199.

GRA0154 Computer Eyes For Mac-Color ..... 349.

### ICD

INP0095 Graflex ..... 82.

### Kensington

NP0059 Turbo Mouse ..... 109.

INP0060 Turbo Mouse ADB (SE or II) ..... 109.

### Key Tronic

INP0156 MacPro Plus ..... 145.

### Koala

INP0127 MacVision 3.0 ..... 269.

### Kraft

INP0094 Kraft ADB Trackball ..... 79.

### Kurta

INP0113 IS/ADB Tablet 8 1/2 x 11 ..... 319.

INP0114 IS/ADB Tablet 12 x 12 ..... 385.

INP0115 IS/ADB Tablet 12 x 17 ..... 625.



### TouchBASE (After Hours)

TouchBASE a database to manage personal contacts. It combines power, functionality and speed with the handiness of a desk accessory. Prints labels, envelopes, fax covers, address books, and reports. Provides multi-user access over a network. Furnishes powerful searching, sorting, marking and much more. Easily imports data from other products such as FileMaker, HyperCard, Microsoft Works, and Excel. **\$89. DAT 0076**

### Microspeed

NP0126 MacTRAC ADB ..... 75.

INP0140 MacTRAC DB9 ..... 62.

### MicroTouch

INP0084 The UnMouse ..... 189.

### Mouse Systems

INP0132 Little Mouse ADB ..... 75.

INP0134 Trackball / ADB ..... 69.

### Sophisticated Circuits

ACC0535 Power Key ..... 65.

## MEMORY UPGRADES & ACCELERATORS

1 MEG SIMMs Low profile, 100ns, High Quality ..... 59.

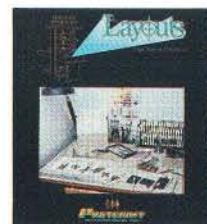
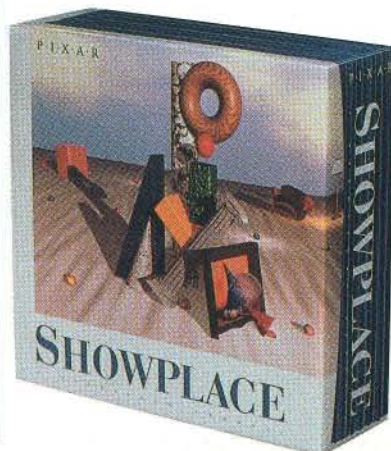
### Daystar Digital

DR0224 FastCache IIci ..... 289.

DR0288 PowerCache - 40 MHz (IIci) ..... 979.

### Showplace (Pixar)

Showplace is a 3D sketchpad for making amazing RenderMan color pictures. With a few mouse strokes you call up ClipObjects (or create your own), arrange them into scenes, give them rich material appearances (Looks), light them, then "render" them into a great image. Your own graphics can also be wrapped onto any object for effects impossible in 2D. Works with (but does not require) MacRenderMan for print-quality computer graphics. **GRA 0267 \$529**



### Layouts

Over 200 templates to design Newsletters, Brochures, Catalogs, Flyers, Business Stationery, and Business Reply Cards. Each one ready to use without worrying about measurements, crop marks, or registration marks. Publish magazine says "Exceptional, high recommended..." MacUser rated four and a halfmice! **\$85. DTP 0063**



### Multi-Ad Search

Multi-Ad Search is a graphic utility program that allows multi-users to create, catalog, manage and manipulate Macintosh-based graphics for placement into desktop publishing programs. **\$129. UTI 0199**

## HARDWARE & PERIPHERALS

### Caere

INP0143 Typist ..... 479.

### CoStar

INP0091 LabelWriter ..... 185.



**OVERNIGHT DELIVERY**  
**ONLY \$3.00**  
 (See details below)

## GUARANTEE

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.

### TelePort, the ADB Modem (Global Village Communication)

The perfect choice for powerful yet compact Mac communication. This 2400 baud modem with MNP5 data compression packs Hayes compatibility and error-free communication. TelePort plugs into your mouse (ADB) port and provides a pass-through connector for other devices. It uses no external power supply, and leaves your serial port free for other uses! **MOD0049 \$145.**

**TelePortFAX includes SendFAX software.** Hold OPTION as you drag FILE-PRINT to easily send FAXes worldwide **MOD0058 \$189.**

### Microsoft Excel 2.2 (Microsoft)

Now use the full memory of your Mac—up to 8 Megabytes. Excel 2.2 recalculates 40% faster while empty cells consume no memory at all. Cell annotation lets you add notes to any cell and auditing functions help you trace cell references. The new Search and Replace function makes global changes. Just doubleclick anywhere on a chart to see the dialog box for all the chartformatting commands. Charts are now dynamically linked to the original worksheet, so the chart automatically reflects any changes in the spreadsheet. Also supports "warm links" to Word 4.0, so changes to your spreadsheet data automatically appear in your Word documents. **\$245. BUS 0003**

### Microsoft Excel

Buy Microsoft Excel 2.2 NOW and you can **UPGRADE to Microsoft Excel 3.0 for just \$50, direct from Microsoft, when available.**

## UTILITIES & PROGRAMMING

<b>Abbott Systems, Inc.</b>	
UT10113 CanOpener	64.
<b>Aladdin Systems</b>	
UT10145 StuffIt Deluxe	63.
<b>ALSoft</b>	
UT10132 DiskExpress II 2.04 w/MultiDisk	57.
UT10110 MasterJuggler 1.5	57.
<b>American Power Conversion</b>	
UT10133 Power Chute	69.
<b>Baseline Publishing</b>	
UT10187 INIT Manager	35.
<b>Berkeley System Design</b>	
UT10119 After Dark 2.0	24.
<b>CE Software</b>	
UT10188 QuickKeys 2 v.2	99.
<b>Connectix</b>	
UT10148 HandOff II	57.
<b>Custom Applications</b>	
UT10136 Freedom of Press 3.0	255.
UT10185 Freedom of Press Light 3.0	56.
<b>Dantz Development</b>	
UT10118 Retrospect	148.
<b>Digital, Inc.</b>	
LNG0036 SmallTalk/V MAC	125.
<b>DubClick</b>	
UT10194 ClickChange	41.
<b>Fifth Generation Systems</b>	
UT10063 FastBack II 2.5	125.
UT10087 SuitCase II 1.2	49.
UT10035 SuperLaserSpool 2.02-Single User	93.
<b>ICOM Simulations, Inc.</b>	
UT10084 On Cue	35.
<b>Insight Development</b>	
UT10098 MacPrint 1.2	95.
<b>Magic Software</b>	
UT10077 Autosave II	28.

### SmartOne 2400/1200 (Best Data Products)

When you need a 2400 baud modem, the SmartOne 2400/1200 provides an economical alternative. For less than the cost of some 1200 bps units, you get a

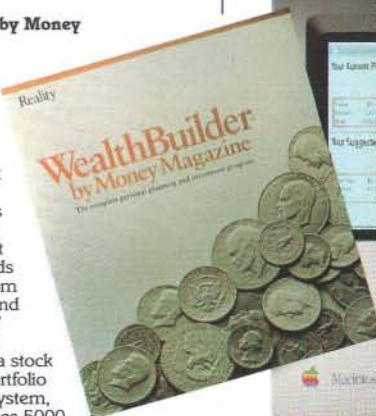
Hayes compatible modem with auto answer/originate, 300, 1200, and 2400 baud operation, pass-through phone jack, speaker with programmable volume, and a manufacturer's two-year warranty. All user options are stored in non-volatile memory. Includes free Quicklink II communications software, modem, cable, and **CompuServe/Prodigy Start-Up Kit offer. \$139. MOD 0021**



<b>Kensington</b>	
ACC0235 Apple Security Kit	34.
PassProof	70.
<b>Kent Marsh</b>	
UT10028 MacSafe II	107.
UT10064 NightWatch 1.03	86.
<b>Microcom</b>	
UT10093 Virex 2.9	59.
UT10150 Virex 10-pack	359.
<b>Symantec Corporation</b>	
UT10149 Symantec Antivirus for the Mac 2.0 (SAM)67.	

### WealthBuilder by Money Magazine (Reality Technology)

WealthBuilder uses your financial data and your decisions about goals and acceptable risks to calculate the best investment strategy. It reads data directly from both Quicken and Andrew Tobias' Managing Your Money. It has a stock tracking and portfolio management system, and now includes 5000 stocks and 5000 bonds from Standard & Poor's, in addition to 1450 mutual funds. **\$145. FIN 0068**



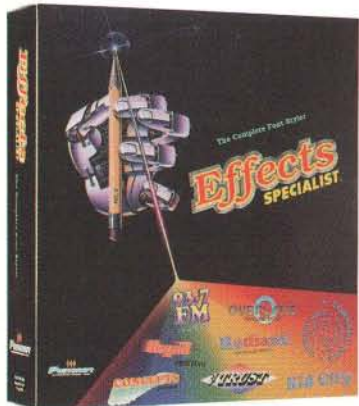
DRI0290 PowerCache - 50 MHz (Ilic)	1699.
PowerCard 030	starting at 1495.
<b>Connectix</b>	
UT10144 Virtual 030 UM3	115.
DRI0185 Virtual 2.0 PMMU	188.
<b>Dove</b>	
DRI0130 MaraThon 030 (MacII) w/Virtual	529.
DRI0198 MaraThon 030 - (Mac SE) w/Virtual	529.
DRI0197 MaraThon 030 - (MacPlus) w/Virtual	529.
DRI0152 MaraThon 030X (MacIIx) w/Virtual	529.
DRI0151 MaraThon 030-SE/030 w/Virtual	529.
<b>Micron Technology</b>	
DRI0321 PicturePress Card (Xceed ICDP-II)	745.
<b>MicroTech International, Inc.</b>	
CHP0025 Mac Classic 1 Meg Upgrade	99.
CHP0026 Mac Classic 3 Meg Upgrade	175.
DRI0315 Mac Classic Upgrade Kit 20-1	399.
DRI0317 Mac Classic Upgrade Kit 40-1	499.
DRI0318 Mac Classic Upgrade Kit 40-3	575.
<b>PowerUser</b>	
CHP0013 1 Meg Simm 100ns PowerUser	59.
<b>Total Systems</b>	
DRI0295 Mercury 16MHz 68030 - Plus	499.
DRI0297 Mercury 16MHz 68030 - SE	389.
DRI0299 Mercury SCSI Module - Plus	189.
<b>Gemini- Full Line Available</b>	
DRI0301 Gemini 20 MHz Card	799.
DRI0302 Gemini 25 MHz Card	999.
DRI0265 Gemini Plus Kit	129.

## MODEMS & FAX

<b>Abaton</b>	
MOD0019 InterFax 12/48	265.
MOD0034 InterFax 24/90	349.
<b>Applied Engineering</b>	
MOD0054 DataLink/Mac	209.

### Effects Specialist (Postcraft)

Transforms any font in your system into sparkling headlines or logos. Just type in a word or two and click the mouse to create instant typographical art! Features include WYSIWYG, color, kerning, a complete background generator and more! 120 effects range from subtly elegant to ultra flamboyant. Imports and exports as PICT or EPSF. Use with your favorite desktop publishing, graphics, or multimedia software. Prints to virtually any printer! **\$115 DTP 0062**



MOD0059 Ultra 96 w/ Smartcom II	929.
<b>Microcom</b>	
MOD0050 MacModem V.32 / 9600	689.
<b>PowerUser™</b>	
MOD0043 PowerUser 2400	99.
MOD0047 PowerUser Mini Send Fax 2400/9600	149.
MOD0051 PowerUser Send/Receive Fax Modem 2400/9600	279.
<b>Prometheus</b>	
MOD0046 24/96 MSR	309.
MOD0052 9600M Plus Modem	699.
MOD0033 Promodem 2400 MFax	209.
MOD0035 TravelModem	199.
<b>Shiva</b>	
NET0067 NetModem V.32 (9600)	1169.
<b>Supra Corporation</b>	
MOD0020 SupraModem 2400	119.

## MUSIC & SOUND

<b>Altech Systems</b>	
MUS0032 ALTECH MIDI Interface	59.
<b>Coda Music Software</b>	
MUS0044 Finale 2.5	549.
<b>Electronic Arts</b>	
MUS0004 Deluxe Music Construction 2.5	85.
<b>Farallon™ Computing</b>	
MUS0036 MacRecorder® 2.0	159.
<b>Opcode Systems</b>	
MUS0083 MIDI Translator	43.
<b>Tactic Software</b>	
Sound Clips Vol. 1, 2, 3 & 4	ea. 50.

## SECURITY & VIRUS PROTECTION

<b>ASD Software, Inc.</b>	
UT10135 FileGuard 2.5	139.
UT10130 FileGuard 2.5 - Office Pack 5	349.
UT10131 FileGuard 2.5 - Office Pack 10	579.
ACC0539 AccessCard Reader	319.
<b>Fifth Generation System</b>	
UT10120 DiskLock	118.



# CompuServe

You can now contact MacWAREHOUSE or place orders with us in the **Electronic Mall** on CompuServe. The **MacWAREHOUSE GO** code is **GO MW**. As always, you'll get fast, dependable overnight service and you can leave messages for Kerry or any of our support staff.

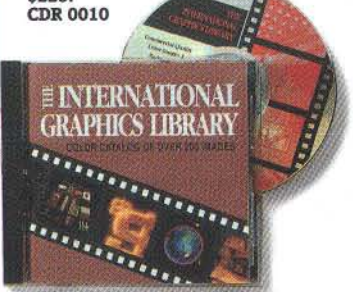
## CompuServe Membership Kit (CompuServe)

The largest on-line data service, with over 500,000 users. Services include electronic mail, bulletin boards, special interest groups (Forums), and a discount department store. You can read the complete text from major newspapers and encyclopedias, plus stock data, weather forecasts and book and movie reviews. Mac users have three special interest Forums: entertainment (MACFUN), personal productivity (MACPRO) and business (MACBIZ). CompuServe's Mac bulletin boards provide a lively forum for exchanging ideas. The Membership Kit contains everything you need to get started, including credit against your first two hours on-line. **\$23. COM 0008**



## International Graphics Library (Educorp)

Put professional visual impact into all of your page layouts, presentations, and multimedia productions with the International Graphics Library CD-ROM. Features over 200 business-oriented images, flags and currencies of the world, globes, maps of countries and states and patriotic and political themes all created in high-resolution 24-bit color PICT and TIFF's, 8-bit color TIFF's and grayscale TIFF's. **\$229. CDR 0010**



<b>Magna</b>		
UTI0166	Empower I .....	89.
UTI0146	Empower II .....	155.
<b>Mainstay</b>		
UTI0073	Capture 3.0 .....	45.
UTI0004	MacFlow 3.1 .....	125.
<b>Microcom</b>		
UTI0191	Microcom 911 Utilities .....	89.
<b>Microsoft</b>		
LNG0030	QuickBASIC .....	64.
<b>Multi Ad Services</b>		
UTI0199	Multi Ad Search .....	129.
<b>Now Software</b>		
UTI0167	Now Utilities 2.0 .....	79.
UTI0168	Screen Locker .....	45.
<b>ON Technology</b>		
UTI0142	ON Location .....	75.
<b>Preferred Publishers</b>		
UTI0190	Personality .....	53.
UTI0183	ScreenShot .....	31.
<b>Salient</b>		
UTI0179	DiskDoubler 3.1 .....	45.
<b>Shana Corporation</b>		
LNG0037	Inside Out .....	369.
<b>SNA</b>		
UTI0207	Offline .....	51.
<b>Symantec Corporation</b>		
UTI0151	Norton Utilities for the Mac .....	89.
UTI0078	Symantec Utilities for Mac II (SUM) .....	99.
LNG0001	THINK's C 4.0 .....	165.
LNG0002	THINK's Pascal 3.0 .....	165.
<b>Zedcor</b>		
LNG0031	ZBasic 5.0 .....	99.

## WORDPROCESSORS & SPELLING CHECKERS

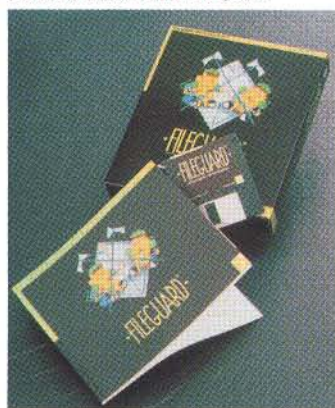
**Ashton-Tate**  
WRD0009 FullWrite Professional 1.1 ..... SPECIAL! 59.

Circle 240 on reader service card

<b>Baseline</b>		
SPL0029	Thunder 7 .....	59.
<b>Caere</b>		
UTI0164	OmniDraft .....	69.
UTI0100	OmniPage 2.1 .....	495.
UTI0163	OmniSpell .....	69.
<b>Claris</b>		
WRD 0026	MacWrite II .....	142.
<b>DeltaPoint</b>		
WRD0032	Taste .....	85.
<b>Deneba Software</b>		
SPL0015	Spelling Coach Pro. 3.1 .....	124.
<b>Lexpertise</b>		
SPL0003	MacProof 3.2.1 .....	115.
<b>LifeTree Software</b>		
SPL0028	Correct Grammar .....	59.
<b>Microsoft</b>		
WRD0022	Word 4.0 .....	245.
<b>RightSoft</b>		
WRD0031	RightWriter .....	55.
<b>Sensible Software</b>		
WRD0023	BookEnds 1.2 .....	51.
SPL0018	Sensible Grammar .....	51.
<b>SNA, Inc.</b>		
WRD0033	Stylist .....	51.
<b>Tactic Software</b>		
WRD0030	Magic Typist .....	50.
<b>T/Maker Co.</b>		
WRD0018	WriteNow 2.2 .....	119.
<b>WordPerfect</b>		
WRD0041	WordPerfect 2.0 .....	299.

## FileGuard 2.5 (ASD)

Protect your Hard drives and Partitions from unauthorized access (including security bypass with a system diskette), copying and erasure; Applications and Files/Folders (including system folder) from unauthorized access, deletion, and/or illegal copying; Desktop (including system folder) from alterations by unauthorized users; Keep an eye on System Usage with the system users log which continuously tracks user/group activity. **Single UTI 0135 \$139. Office 5 Pack UTI 0130 \$349. Office 10 Pack UTI 0131 \$579.**



# STOP PRESS

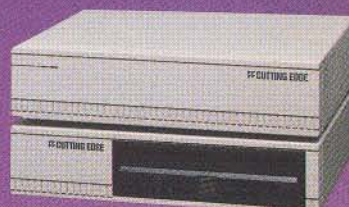
## Cutting Edge Hard Disk Drives (Cutting Edge)

New enhanced Cutting Edge drives deliver quiet, reliable memory with access times as low as 20ns. New features include two power outlet, 50-pin cables for easier daisy chaining, a

quieter fan, dual-fuse surge buffer and simplified operation manuals. Available in 20 MB to 80 MB. **20MB Only \$329, 30+MB Only \$389, 45+MB Only \$449, 60+MB Only \$489, 80+MB Only \$539.**

## 45MB Removable

The enhanced 45MB Removable is based on the same award winning SyQuest mechanism that other leading makers offer at twice the price. Exchangeable cartridges provide unlimited storage. **45 MB Removable \$669.**



New Full-Featured  
**\$99**  
COMPLETE  
2400 Baud Modem

## 2400 BPS Mini Modem

Install a new Power User 2400 baud modem and log on to any of the exciting on-line services! This fully Hayes compatible modem comes with everything you need to start communicating. It's easy to install and ready to use. Comes with MacKNOWLEDGE communication software and the latest Maxfax software. Cable is included. **MOD 0043 Only \$99.**

## 24/96 Mini Send/Receive Fax

Includes all the features of the PowerUser 2400 BPS Mini Modem plus a powerful 9600bps send/receive fax to meet all your communication needs. Preview your fax on the screen, print it, delete it or forward it to another fax machine. Includes greyscaling to any Group III fax. All PowerUser modems come with a one year warranty. **MOD 0062 Just \$199.**

I'm Donna, call me at  
**MacWAREHOUSE®**

**1-800-255-6227**

Inquiries: 908-367-0440

FAX: 908-905-9279

**ORDER TOLL-FREE**

**24 HOURS A DAY.**

**NEW! Express Customer Service Number:**

**1-800-445-9677**

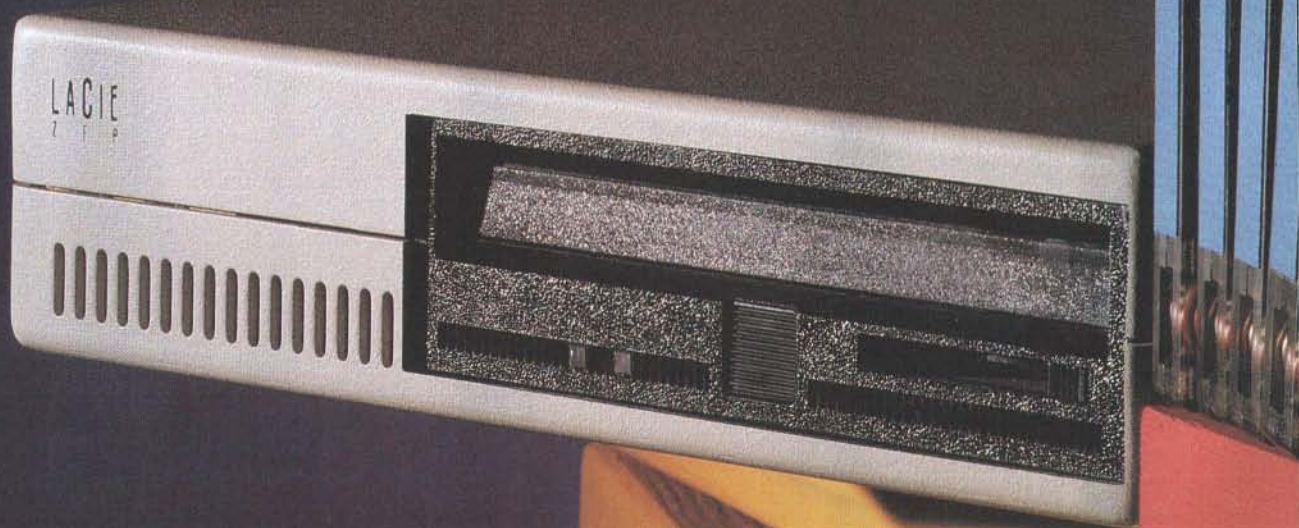




# EXPANS

*Made Easy*

Removable cartridges conveniently  
stretch your storage



by Tom Negrino



# ION



"Aaarrrgh!"

Upon hearing the shriek of frustration, I hurried down the hall. Betty, our firm's graphic designer, was glaring and cursing at her Mac as though it were . . . well, a PC.

"What's the matter?" I asked.

"I'm out of disk space again," she spat. "I remember thinking that 40 megabytes would be enough for me. But now that I have this new graphics program, my hard drive seems to have shrunk. I don't have enough room for my current files, much less older projects I'd like to keep around for reference. I'll have to order a bigger hard drive."

I smiled. "How about a drive that grows to as big as you need?" I asked.

"What do you mean?" she responded skeptically. "There's no such thing."

"Well, maybe not." I conceded. "But a removable-cartridge drive is almost as good."

Betty had fallen prey to a common problem. It's uncanny how a new hard drive's wide open spaces end up feeling like an overcrowded elevator after just a few months of use. Removable-cartridge drives offer an elegant solution—they grow to meet your needs.

For this article, I evaluated three kinds of cartridges: hard disks produced by SyQuest and Ricoh, and the flexible Bernoulli disk pro-



duced by Iomega. I judged them on speed, convenience, reliability, and price; and I compared software bundling by the more than 30 vendors who package the three cartridge types (see "Removable-Cartridge Drives Compared"). Overall, SyQuest drives—which offer the least expensive choices—proved the most sensible for most users.

### Range of Uses

Removable-cartridge drives offer virtually unlimited storage capacity; when you fill a cartridge, which holds 40MB to 50MB, simply eject it and put in a new one. These drives serve well as primary storage, since the Mac can boot from them and they are almost as fast as fixed hard drives. Like removable hard drives, cartridges can also serve as auxiliary storage or backup devices (see "Hard Drives to Go"). Although tape drives cost less per megabyte, cartridges store and access data much faster than do tape drives. Moreover, cartridge drives eliminate the extra step of restoring data from tape to the hard drive. Because cartridges can be mounted on the desktop, they make it easy to access archival data that you need to refer to occasionally but don't want cluttering up your main hard drive.

You can use floppies for archiving, of course, but consider that 1 cartridge holds as much data as 54 floppies with 800K capacity. Cartridges are much faster, more convenient, and more compact than floppies. With a cartridge drive, you may actually back up your main hard drive regularly, the way you keep meaning to do.

Some users set up separate cartridges for various categories of work; say, one cartridge for accounting, another for graphics, a third for a database. Still another way of using these units would be to let people who share a single Macintosh each maintain their own private cartridge, set up with the INITs, fonts, and programs that they prefer.

### SyQuest the Trailblazer

SyQuest removable-cartridge systems have been available for the Mac since early 1988. Custom Memory Systems (now defunct) and Mass Microsystems (which has prospered) pioneered the units. More than a dozen manufacturers now offer the drives, but all of these mechanisms and cartridges are supplied by SyQuest.

The systems come in two parts. The removable cartridge consists of a plastic shell that protects a hard platter (see "Mechanical Variations"). You can write-protect a cartridge by turning the red tab on the bottom of the cartridge. The drive has Ready and Access lights on the front panel.

To eject a cartridge, drag its icon to the Trash to unmount it from the desktop, then press the square stop button on the drive, which causes the cartridge to spin down and stop. Finally, move the load lever to the right, and the cartridge pops out. It takes about 10 seconds to spin down and eject a cartridge, and about 20 seconds to insert and mount it on the desktop.

A formatted SyQuest cartridge holds 42.2MB, and its speed, while not blazing, is more than adequate. The drives showed an access time of 24ms, only slightly slower than the Quantum 40MB hard drive that Apple ships in SE/30 and IICI machines. Compatibility between SyQuest drives supplied by different vendors is excellent.

### Setting the Pace

SyQuest drives have become a de facto standard for removable storage, especially in the graphics arena. Since desktop publishing and color graphics files can easily grow larger than 10MB, many designers and service bureaus have turned to SyQuest drives as a convenient way to shuttle huge files between the desktop and the Linotronic. But some users, such as multimedia mavens or those who generate giant QuarkXPress files with color photos, may create files too large to fit on the 42MB SyQuest cartridges. These folks have to resort to optical drives, or just haul their hard drives downtown. As *Macworld* went to press, however, PLI, Mass Microsystems, and MicroNet had just announced 88MB versions of the SyQuest drive—large enough to store most multimedia or graphics files. Those drives, which should be shipping by the time you read this, will read, but not write to 45MB SyQuest cartridges.

With so many manufacturers competing to deliver what is basically the same product, SyQuest vendors attempt to differentiate their offerings by price and by bundling extra software with the drives. Many manufacturers include several megabytes of shareware and public-domain software with their drives. As with any such pot-pourri, you'll trash some programs and find others to be occasionally useful—and some will be software gems that become your regular tools.

The Microtech R50 features a Ricoh mechanism.





PLI includes a backup program, a print spooler, a disk optimizer, a disk-caching utility, a virus killer, and Casady & Greene's A.M.E. security software. La Cie provides an extensive bundle, including its excellent Silverlining formatting and partitioning software; Silverserver, which lets you share modems or other serial devices over a network; virus killers; demo versions of several commercial packages; and The Norton Utilities.

### Undependable?

SyQuest has come under fire for producing unreliable products. The claims center around cartridges' contamination by dust, and mechanism failures. In a standard hard drive, the platter and heads are sealed in an airtight chassis. Because the SyQuest cartridge must open its shutter inside the drive to admit the read-write heads, dust can enter the cartridge and cause bad sectors, read and write errors, and even head crashes. Not surprisingly, SyQuest dependability falls short of that of fixed hard drives.

One high-volume vendor told me that his company's field-failure rates for SyQuest drives are more than double the rate for Quantum fixed hard drives. SyQuest cartridge field-failure rates are higher still, he said. His company tests each SyQuest drive and cartridge—not just a statistical sample—before it goes out the door, and such testing prevents many failed drives and cartridges from reaching customers.

Several other vendors argue that careful attention to design, use of proper components (especially the power supply), and thorough quality-control usually keep SyQuest drive field-failure rates well within acceptable standards. But vendors that don't test every drive probably see a higher percentage return for repairs. Before you buy a particular brand of SyQuest drive, ask about the vendor's testing procedures.

When a SyQuest cartridge fails, it tends to accumulate a rapidly increasing number of errors. Signs that a cartridge is going bad include read or write errors when copying files, a high-pitched squeal, and trouble mounting the cartridge. When this happens, back up the cartridge if you can, and reformat it as soon as possible. In extreme cases, the cartridge may need to be replaced.

Prices for SyQuest units vary widely, from \$439 charged by MacLand to \$1399 for the Rodime drives. Each company uses the same mechanisms and cartridges. An obvious choice?

There are several reasons to consider paying more than the lowest price you can find. You may be more comfortable dealing with a local computer store that carries only a more expensive drive. And you may want to evaluate the amount and type of software provided. If purchased as separate programs, some software bundles cost

## HIGH-DENSITY FLOPPIES: WHERE ARE YOU?

A few years ago Jasmine introduced the MegaFloppy, a 10MB (and later 20MB) drive based on a 5¼-inch Kodak floppy disk. Its sluggishness and media reliability problems suggest why Jasmine pulled the product off the market.

Insite Peripherals takes a different approach with a new technology, the *floptical* drive. This is a standard 3½-inch high-density floppy disk with optical-servo tracks embedded into the disk by a laser. Precision spacing of these tracks allows 20MB to be stuffed on the floppy—25 times as much as on a standard floppy.

The Insite drive will also read and write the lower-capacity Macintosh 800K and 1.4MB floppy formats, as well as the DOS 720K and 1.44MB sizes. As a SCSI device, the Insite floptical will hook up to the Mac easily, and the individual disks are expected to cost only about \$10.

So where can you get one? As *Macworld* goes to press, you can't. Insite is currently marketing its product to system integrators who will package the drive. An Insite floptical will probably hit the market sometime this spring, in the \$750 price range.

more than \$500, so paying \$100 more for a drive with an extensive bundle is often worth it.

If you have no need for extra software and no requirement for local support, then price is a good guide—as long as you feel confident that the manufacturer pretests its drives.

### The Ricoh Entry

Ricoh cartridges are the newest contender for the hearts and dollars of Mac users, having appeared on the market only within the past year. These units, now offered by GCC Technologies, Microtech International, Sumo Systems, and Univation, resemble the SyQuest drives in that they also use a removable hard disk cartridge.

## THE PRICE OF EXPANSION

Media Type	Formatted Capacity	Best Retail Price per Cartridge	Best Street Price per Cartridge	Best Retail Price per MB	Best Street Price per MB
SyQuest	42.2MB	\$68.00	\$69.00	\$1.61	\$1.64
Bernoulli	42.8MB	\$140.00	\$86.00	\$3.27	\$2.01
Ricoh	46.7MB	\$125.00	\$125.00	\$2.68	\$2.68
HD Floppy Disk	1.4MB	\$4.52	\$1.40	\$3.23	\$1.00

Because expandability represents a chief virtue of removable-cartridge drives, it's important to consider the cost of each technology in the long run. Let's say that you have a 40MB internal hard drive in your Mac, and that you buy a cartridge drive and use it for all three of its main functions: expanded storage, backup, and archiving rarely used data. You need three cartridges. The mail-order ads in the back pages of *Macworld* generally offer the best prices on media, and all three cartridge types are readily available.

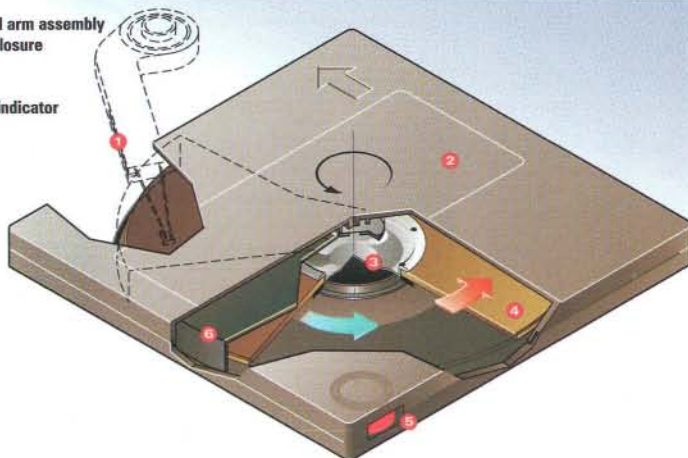
A drive typically comes with one cartridge, so for two more cartridges, you would pay \$136 for SyQuest, \$258 for Bernoulli (actually, you can't buy single cartridges, only three-packs, so you're getting an extra here), and \$250 for two extra Ricoh cartridges. The Ricoh product is by far the most expensive, at street price, per cartridge and per megabyte; SyQuest is the least costly.



# Mechanical Variations

## SyQuest

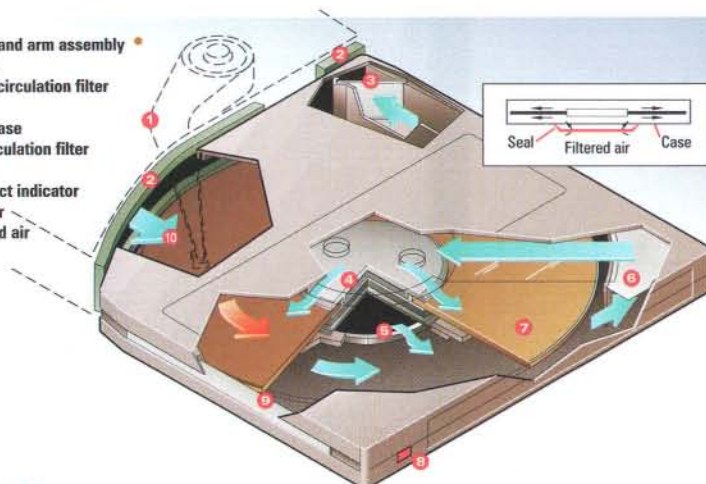
- 1) Drive head and arm assembly
- 2) Protective enclosure
- 3) Hub
- 4) Medium
- 5) Write-protect indicator
- 6) Dust cover



The SyQuest cartridge has the most basic design of the three types of removable cartridges. The rigid-medium platter is surrounded by a simple plastic case and connected to a lightweight metal hub. A single, spring-loaded dust cover protects the medium from contamination while outside the drive, and opens to reveal the platter to the drive head when the cartridge is fully enclosed by the drive during operation. There are no air filters or seals to guard against incidental contamination while inside the drive. The head sweeps across the disk in the manner of a record player's tonearm and stylus, directly contacting both sides of the medium to read and write.

## Ricoh

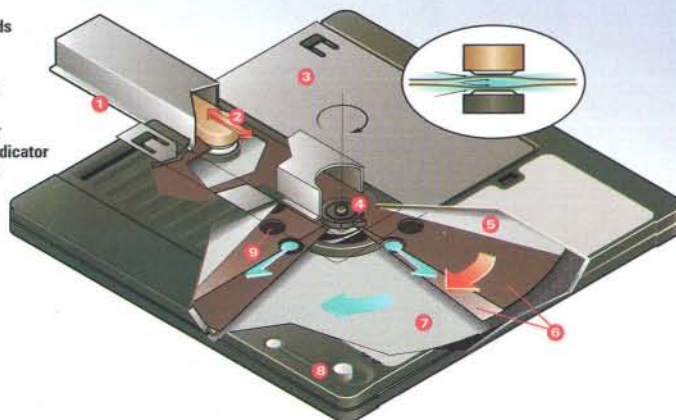
- 1) Drive head and arm assembly
- 2) Foam seals
- 3) Secondary circulation filter
- 4) Hub
- 5) Magnetic base
- 6) Primary circulation filter
- 7) Medium
- 8) Write-protect indicator
- 9) Dust shutter
- 10) Recirculated air



The more complex Ricoh cartridge uses multiple air filters and seals to prevent contamination that can cause disk or head crashes. An air-flow system clears dust away from the platter. As with the SyQuest cartridge, the read-write head directly contacts both sides of the rigid medium in a sweeping motion. The sturdier Ricoh cartridge features a heavy, balanced platter hub, positioned on a magnetic base. A seal prevents contaminated air from reaching the medium from below, via the hub assembly (see detail).

## Bernoulli

- 1) Spicule ledge
- 2) Read-write heads
- 3) Dust shutter
- 4) Hub
- 5) Upper disk liner
- 6) Media
- 7) Lower disk liner
- 8) Write-protect indicator
- 9) Air-intake holes



Bernoulli cartridges closely resemble standard floppy disks. Bernoulli technology uses two single-sided platters. The read-write heads move laterally, unlike in the other two drives. The Bernoulli does not filter dust particles, but circulates air to move dust away from the media. Unlike in the SyQuest and Ricoh units, the read-write heads do not actually contact the media, so head crashes cannot be caused by dust particles, and disk crashes are also rare. As seen in the detail, each platter flexes toward the head. An air cushion between the two floppy platters allows them to flex inward should a dust particle approach the head. The cartridge also locks in place while in use, preventing the loss of data that could result from accidentally removing the drive. This is necessary because unlike its competitors, the Bernoulli cartridge protrudes from the drive during operation.



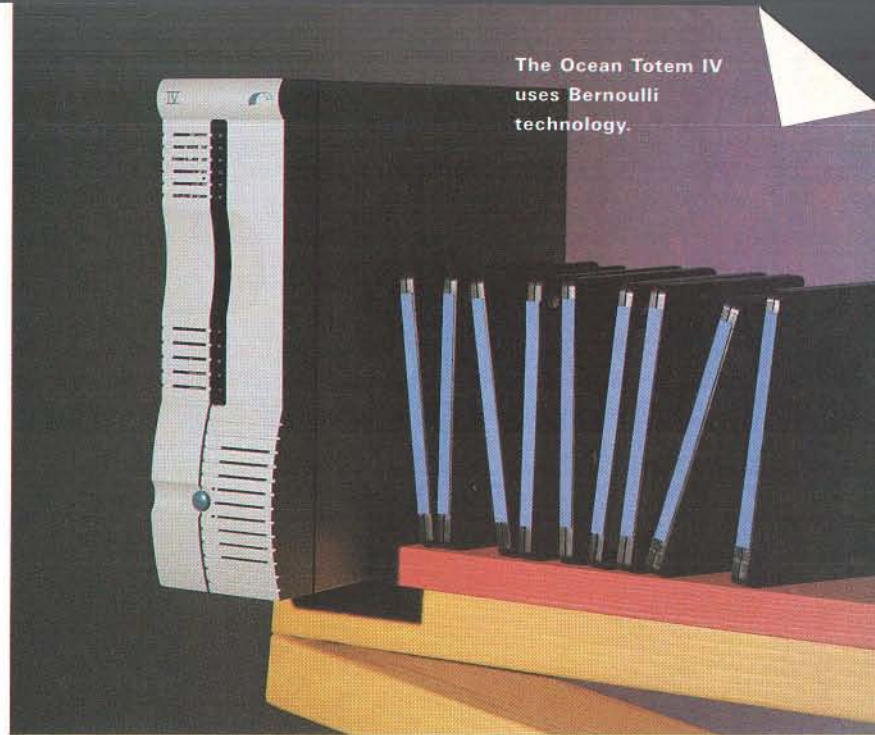
The rugged Ricoh cartridges, however, feature a mechanism that locks the platter's hub and keeps it from turning when the cartridge is outside of the drive, a shutter that's much more difficult to open than the SyQuest counterpart, and an air filter to keep particles out. Ricoh cartridges also hold about 4.5MB more data than the SyQuest ones, and format to 46.7MB.

Ricoh drives have a simpler eject sequence than the SyQuest units. Dragging the icon of the disk to the Trash unmounts it from the desktop and spins the cartridge down to a stop. The Eject button then pops the cartridge out. Pushing the Start button respins the drive if you wish to remount the cartridge before you have ejected it. Air seals prevent contamination of the platter while it is inside the drive.

### Similar Performance

The two Ricoh-based drives (from GCC Technologies and Microtech International) worked well. Both companies provide formatting software. And unlike some SyQuest vendors, both Ricoh distributors bundle an INIT that lets the Mac recognize and mount cartridges even without a cartridge inserted at start-up. Microtech adds a backup program and The Norton Utilities to the package, and GCC includes Symantec's SUM II, a print spooler for QuickDraw printers, an envelope-printing DA, and 4MB of shareware. Cartridges were perfectly interchangeable between the two manufacturers' drives.

The SCSI Evaluator speed tests showed the SyQuest drives to have a slight edge over the Ricoh units in read, write, and seek tests. But in real-world tests, copying and opening a standard application, the two types of drives performed almost identically (see "Cartridge Speed Tests").



Ricoh claims that its sealed cartridge and drive are more reliable than SyQuest's. But as the drives were released only a short time ago, there isn't much consumer-market confirmation.

At \$1299 for the units from GCC and Microtech, you will pay triple the price of the cheapest SyQuest drive, and extra cartridges cost more, too (see "The Price of Expansion"). While both companies add extensive software bundles, these are not enough to offset the higher prices.

### Bernoulli's Flexible Disk

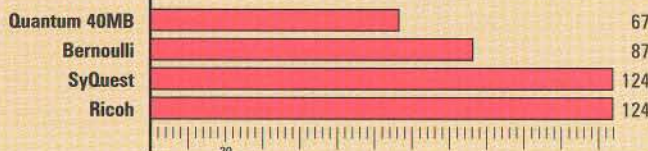
Bernoulli cartridges, made by Iomega, employ a fundamentally different technology. While SyQuest and Ricoh use rigid platters, a Bernoulli cartridge contains a flexible disk in a hard shell, much like a standard floppy disk. A 5¼-inch Ber-

## Cartridge Speed Tests

All times are in seconds

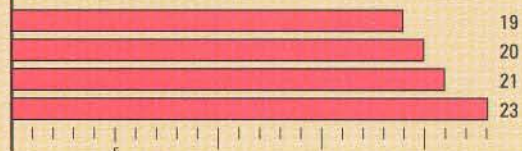
### Back Up 10MB Folder

Many people buy cartridge drives for easy backup of their main hard drive. In this standard maintenance task, only the Bernoulli drive approached speeds attained by the Quantum 40MB internal hard drive, shipped with many Macs. If backup is your primary need, Bernoulli is the clear favorite.



### Open Excel File

Used as a main hard drive for everyday operations, a cartridge drive performs nearly as well as a Quantum drive. In a common, random-access chore, such as opening a database file, the differences between the three types of cartridge drives and the Quantum were nearly negligible.





# REMOVABLE-CARTRIDGE DRIVES COMPARED

Company	Drive	Drive Price <sup>1</sup>	Media Price	Capacity <sup>2</sup>	Termination	SCSI Address	Software Included <sup>3</sup>	Drive/Media Warranty (in years)
<b>SYQUEST DRIVES</b>								
Alliance Peripheral Systems	APS-45R	\$59.00	\$72	45MB	external	DIP switches	F, PD	2/1
Club Mac	SyQuest 45	\$495.00	\$70	45MB	internal	push button	O	2/1
CMS Enhancements	MacStack Removable	\$999.00	\$179	45MB	internal	DIP switches	F	1/1
Cutting Edge	45MB Removable Cartridge Drive	\$1139.00	\$139	45MB	internal	push button	B, O	2/1
Data Enhancements	ProDisc <sup>4</sup>	\$629.00	\$79	45MB	Internal <sup>5</sup>	push button	D, F, PD	1/1
DPI	DPI 44 Removable	\$570.00	\$70	45MB	internal	dial	F	2/1
Ehman	45MB Removable Cartridge Drive	\$549.00	\$89	45MB	internal	push button	F	2/1
FWB	hammerDisk44	\$1195.00	\$119	45MB	external	push button	F, O	1/1
Hard Drives International	PowerDrive Removable	\$575.00	\$79	45MB	external	push button	F	1/1
iDS Systems	iDS 45 Removable	\$599.00	\$79	45MB	switchable	push button	F, P, S, V <sup>6</sup>	2/1
Jasmine Technologies	Removable 45	\$549.00	\$79	45MB	external	push button	F, PD	2/1
La Cie	ZFP 45R	\$898.00 <sup>8</sup>	\$99	45MB	internal	dial	F, N, O, PD, V	1/1
MacLand	SyQuest	\$439.00	\$68	45MB	internal	push button	F, O	1/1
MacProducts USA	MagicDrive 45 Removable	\$499.00	\$69	45MB	external <sup>5</sup>	push wheel	B, F, PD, O	2/1
Mactown	DataStor	\$499.00	\$89	45MB	internal	dial	F	1/1
Mass Microsystems	DataPak <sup>7</sup>	\$1199.95	\$129	45MB	internal	push button	D, F, PD, O	2/1
Mass Microsystems	DataPakDuet <sup>7</sup>	\$2149.95	\$129	90MB <sup>8</sup>	internal	push button	D, F, PD, O	2/1
Mass Microsystems	DataPak Ilc <sup>8</sup>	\$1199.95	\$129	45MB	internal	push button	D, F, PD, O	2/1
Mass Microsystems	DataPak II <sup>10</sup>	\$1239.95	\$129	45MB	internal	push button	D, F, PD, O	2/1
Mass Microsystems	DataPak Ilduet <sup>10</sup>	\$2219.95	\$129	90MB <sup>8</sup>	internal	push button	D, F, PD, O	2/1
MicroNet Technology	MR-45	\$995.00	\$129	45MB	external	push button	F	1/1
Mirror Technologies	RM42	\$617.00	\$89	45MB	external	push button	B, F, O	2/1
Optima Technology	DisKovery 45R	\$995.00	\$149	45MB	external	push button	F, O	1/1
PLI	Infinity40 Turbo Economy	\$899.00	\$129	45MB	switchable	dial	F, PD	1/1
PLI	Infinity40 Turbo	\$999.00	\$129	45MB	switchable	dial	B, F, PD, O, V	2/1
Procom Technology	MRD 40	\$995.00	\$145	45MB	external	dial	911, F, V	1/1
Relax Technology	Relax Mobile 42	\$799.00	\$119	45MB	external	push button	F, O	2/1
Rodime Systems	R45 Plus	\$1399.00	\$149	45MB	internal	push button	F	2/1
Ruby Systems	StarDrive 45RX	\$580.00	\$75	45MB	internal	step switch	F	1/1
Third Wave Computing	45R	\$599.00	\$72	45MB	internal <sup>5</sup>	push button	F	2/1
Third Wave Computing	45DR	\$1099.00	\$72	90MB <sup>8</sup>	external	push button	F	1/1
Total Peripherals	TP44-R	\$739.00	\$99	45MB	internal	push button	F	1/1
<b>RICOH DRIVES</b>								
GCC Technologies	UltraDrive 50R	\$1299.00	\$129	50MB	external	push button	F, PD, O, S	2/2
Microtech International	Microtech R50	\$1299.00	\$129	50MB	external	push button	B, D, F, N, X	2/2
Sumo Systems	SSER50	\$1300.00	\$130	50MB	external	push button	F	1/1
Univation	Q50	\$1295.00	\$125	50MB	internal	push button	F	1/1
<b>BERNOULLI DRIVES</b>								
Iomega Corporation	Bernoulli Transportable 44 <sup>11</sup>	\$1259.00	\$140 <sup>12</sup>	44MB	switchable	push button	F	1/5
Iomega Corporation	Bernoulli Portable 44 <sup>11</sup>	\$1699.00	\$140 <sup>13</sup>	44MB	switchable	push button	F	1/5
Iomega Corporation	Bernoulli Dual <sup>11</sup>	\$2399.00	\$140/\$90 <sup>12</sup>	65MB <sup>14</sup>	switchable	push button	F	1/5
Ocean Microsystems	Totem IV	\$1350.00	\$140	44MB	external	push button	F, M	1/5
Ocean Microsystems	Totem IIID	\$2350.00	\$140	88MB <sup>8</sup>	external	push button	F, M	1/5

<sup>1</sup> List prices; street prices through dealers may be lower. <sup>2</sup> Unformatted capacity. Actual formatted capacities are 42.2MB for SyQuest, 46.7MB for Ricoh, 42.8MB for Bernoulli.

<sup>3</sup> 911 = 911 Utilities, B = backup, D = demo commercial software, F = formatting, M = MacTools Deluxe, N = The Norton Utilities, O = Other, P = Print spooler, PD = public domain and shareware, S = SUM II, V = virus killer, X = Mac-MS DOS partitioning software. <sup>4</sup> Also ships in a dual drive format, with one fixed drive, one removable. <sup>5</sup> External option available. <sup>6</sup> S and V cost \$30 extra. <sup>7</sup> Macintosh Plus/Classic/SE footprint. <sup>8</sup> Two drive mechanisms in one cabinet. <sup>9</sup> Macintosh IIcx, IIci footprint. <sup>10</sup> Macintosh II, IIx, IIcx footprint. <sup>11</sup> Requires one of two Mac-interface cable/software packages for \$50 or \$130. <sup>12</sup> Double-sided/single-sided cartridge. <sup>13</sup> Single cartridge price. Sold only in three-pack of cartridges for \$420 list. <sup>14</sup> Dual drive, using one single-sided, one double-sided cartridge.

noulli cartridge, which holds 42.8MB of data after formatting, looks like a beefy floppy.

Iomega claims that a flexible disk prevents head crashes and increases reliability, and Iomega backs up its boasts with a five-year warranty on media. And these drives are fast. We found the Iomega unit to be superior to any of the SyQuest or Ricoh drives in file-copying tests.

I tested Bernoulli drives from the two manufacturers that offer them: Iomega, which pioneered the technology, and Ocean Microsystems, a licensee. The Ocean Totem IV is an attractive unit that performed well. The Iomega Transportable 44 has switchable SCSI termination, a feature that I wish all SCSI peripherals included, because it eases the torment of proper SCSI termination.



As with most other vendors of removable systems, Ocean and Iomega include an INIT that enables the Mac to mount cartridges after it has been turned on. The Ocean drives ship with one cartridge; the Iomega units with three.

Unlike the SyQuest and Ricoh products, Bernoulli cartridges require a lengthy formatting and testing procedure, which takes almost 20 minutes per cartridge. Of the two Bernoulli vendors, Iomega includes markedly better formatting and testing software. Iomega allows you to switch to another program under MultiFinder while the formatting and testing takes place in the background. Ocean's software ties up the Mac the whole time that it's formatting a cartridge.

### Mixed Blessing

The Bernoulli drives provide equal amounts of pleasure and frustration in use. In my tests, the cartridges mounted onto the desktop faster than the Ricoh and SyQuest units, and seemed as fast as a hard drive. I used them to back up my 40MB hard drive, using both Retrospect and DiskFit software. The Bernoulli's speed and convenience made the chore almost fun. Switching cartridges is also easier than with the other two formats, since you don't have to wait as long for the Bernoullis to spin down, eject, and spin up again.

Even with their fine performance, the Bernoulli units have some serious drawbacks. First and foremost, they're pricey. The Iomega Transportable 44 lists for \$1259, nearly three times as expensive as the MacLand SyQuest drive. And Bernoulli drives are noisy, especially when accessing the disk.

The drives are also heavy—a problem for Iomega, which has introduced transportable and portable (battery-operated) versions of the unit. The transportable version weighs in at 12 pounds. Despite the handle, the portable unit's 14 pounds (with battery) are too much for the average traveler. Add a 16-pound Mac Portable, then wait for the backache. While preparing this article, I needed to move about 30MB of data from home to my office. Rather than lug along the Iomega Transportable 44, I ended up copying the data onto a SyQuest cartridge and putting the La Cie drive—about 6 pounds—into my briefcase.

Iomega has a large installed base in the IBM PC-compatible market, and has periodically introduced Bernoulli products for the Mac that range in capacity from 10MB to the current 44MB. The latest version, although positioned to compete favorably in capacity and speed against the SyQuest unit, faces an uphill battle because of its high price.

### Which to Buy?

Any of these drives will work well for you if you never exchange files with other Macintosh users.

## HARD DRIVES TO GO

**R**emovable-cartridge drives aren't the only option if you want to carry data with you. Removable hard drives, such as Image South's SneakerNet, Z Microsystems' Tranzpak, and Mega-Drive from Mega Drive Systems, contain the same type of sealed hard drive that is normally installed inside a computer. These units consist of two parts: a cabinet, which holds the power supply for the drive; and the hard drive itself, which comes in a shock-mounted case that plugs in to the cabinet.

Removable hard drives share the advantages of removable-cartridge drives, and offer additional selling points. Since the drive mechanism is sealed, reliability should be superior to any of the cartridge units. Moreover, most hard drives are faster than the times we clocked for the cartridge drives.

And removable hard drives can be much larger—up to 1.3GB for a version of the Tranzpak. Users with high data-security requirements appreciate being able to work on a removable hard drive during the day, then remove the drive and lock it up in a safe at night.

On the negative side, to move data from place to place you need to buy an extra cabinet for the second location. Adding more capacity is also expensive. And because each company uses its own plug scheme, the drives and cabinets from different manufacturers aren't interchangeable. For most of us, a SyQuest or Bernoulli drive represents a cheaper and more convenient option than a removable hard drive.

All three formats demonstrated comparable performance, and although all had their quirks, they were fairly easy to set up and use.

On balance, the best removable choice for most people remains a SyQuest drive. Despite some legitimate concerns over reliability, there are so many drives in use that the SyQuest format has become the standard with service bureaus, and increased production has brought the cost of some drives, with several cartridges, well under \$1000. The fast and easy-to-use Bernoulli technology is my second choice in a removable drive. But the noise bothered me, and I cringe at the thought of tightening my belt a notch to buy, then feed, a Bernoulli drive. Extra Bernoulli cartridges run about 25 percent over the cost of SyQuest cartridges.

Ricoh has a tough road ahead in its attempt to gain market share. The Ricoh products cost considerably more than the SyQuest products, with no significant performance advantage. And Ricoh cartridges are incompatible with the more common SyQuest machines. Considering that Ricoh's claims of better reliability remain unproved, SyQuest remains the favorite. ■

See *Where to Buy* for contact information.

.....  
*Tom Negrino is a Macintosh consultant and a director of the Los Angeles Macintosh Group. He is a frequent contributor to Macworld.*







# Solving the Monitor Mystery

*Use Macworld Lab tests,  
not your intuition, to track down  
the best monochrome monitor*

---

◀ ◀ ◀ ◀ by Robert C. Eckhardt

---

---

Photographs by Robin Ginsberg / screen image by Jock McDonald

---

➔ LONG AGO IN THE OTHERWISE QUIET town of Sleepy Hollow, schoolmaster Ichabod Crane was terrorized by a mysterious, headless horseman. Totally unnerved, Crane left Sleepy Hollow, his job, and his beloved for good. As I look at this year's batch of monochrome (black-and-white and gray-scale) monitors, I find it easy to sympathize with Ichabod Crane. A headless Macintosh is not nearly as terrifying as a headless horseman, of course, but determining which type of monitor should sit atop (or beside) your

Mac can be a frightening experience. While you're not likely to leave town or lose a loved one if you fail to pick the correct monitor, you may waste a lot of money, work less productively, or strain your eyes unnecessarily.

On the following pages, I help you put the right monochrome head on top of a Mac II, or a second head beside a Mac Plus, Classic, SE, or SE/30. The overall quality of the systems Macworld Lab and I tested was higher than ever—so high that it was often necessary to make fine



# Solving the Monitor Mystery

distinctions to choose among them. We submitted 38 black-and-white and gray-scale monitor systems—board-and-monitor combinations from a single vendor—to a battery of objective measurements and subjective evaluations. (Although it is possible to buy monitors and boards separately, we chose to test and report on

object-oriented drawing. In addition, since it has to keep only two balls in the air at one time, rather than 256, a black-and-white monitor is faster and more responsive.

Next, I divided the monitors by size. In comparison to a compact Mac's 9-inch diagonal screen, small 12-inch to 15-inch displays aren't re-

the tube size). Despite their name, most cannot display a full two pages. Displays with the smaller dimensions chop off about 1 inch top and bottom and 2 inches right and left; those with the larger dimensions lose about 1 inch right and left. Nonetheless, two-page monitors are prized by people who produce newsletters and

other periodicals, work on very large spreadsheets, or create large or complex graphics. As with real estate, however, the greater acreage demands a premium price.

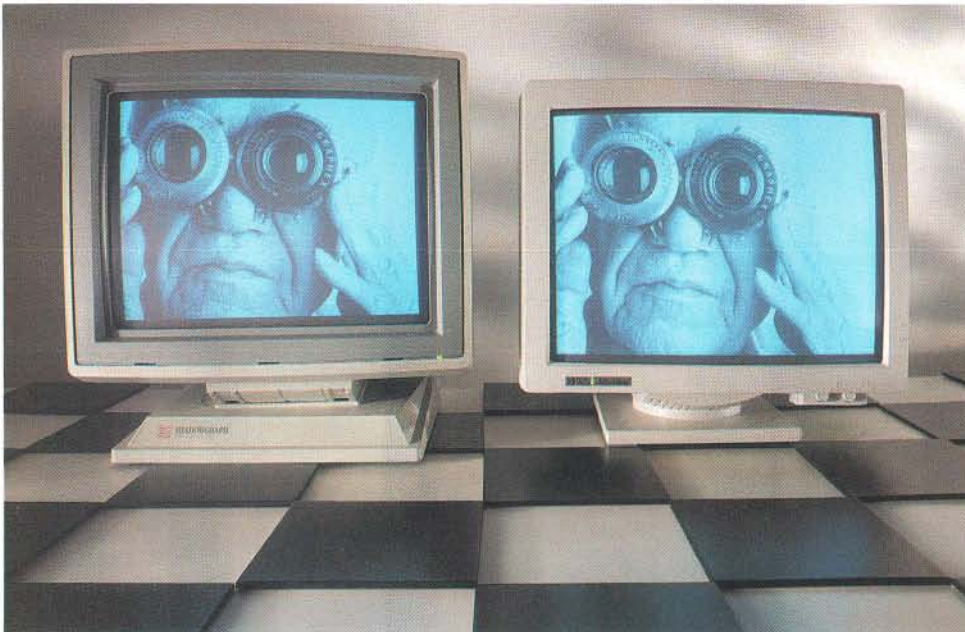
When purchasing a monitor, first narrow your choices by dividing up the monitor pie just as I have and determining which slice appeals to you. Next, look more closely at the choices available within that slice. Eliminate those monitors that are incompatible with your Macintosh, then check out the price and quality of the finalists. Price is straightforward (although street prices can be significantly lower than suggested retail). Quality is quite another matter, however, since it is the sum of many

parts: focus, contrast, brightness, distortion, and phosphor color.

## Two-Page Black-and-White Displays

The 14 two-page black-and-white displays we reviewed range in price from about \$900 (Ehman's Two-Page Monochrome display and Mirror Technologies' PixelView II) to about \$2400 (Radius's TPD/21). They range widely in phosphor color, too, from the strong blues of the MegaGraphics Rival and Radius's TPD/21 to the noticeably amber L-View and SilverView from Sigma Designs and the Viking 3/72 M from Monitorm. The remaining monitors—such as Dottronix's MegaScreen 21" and RasterOps' ClearVue/II and SE (see "Quality Tests")—are a more neutral white.

In our subjective evaluation, brightness and contrast rate a good or better on almost all the monitors. For instance, although Macworld Lab



For the budget-minded, PCPC's solid ShadowGraph (left) is an excellent bargain in the two-page gray-scale display category. For those who don't mind spending a bit more, Sigma Designs' amber-colored SilverView Grayscale is high on our list of favorites.

whole systems because the best price is usually obtained in a system purchase, and because most people prefer the simplicity and convenience of one-stop shopping.) The results of our tests are reported below.

## First Cut

Faced with so many display systems, the first thing I did was subdivide them into groups based on gray levels. Gray-scale monitors can display up to 256 shades of gray, while black-and-white monitors can display only two (black and white). Gray-scale adds significantly to the cost of a display system but is essential if you work with scanned photos or many kinds of PostScript art. Black-and-white systems are less expensive and perfectly adequate for tasks that occupy most of the workaday world: word processing, number-crunching, data processing, and bitmapped and

ally so small. With pixel dimensions of 640 by 480, these displays can't accommodate a full page either vertically or horizontally, but they're large enough for many people (including me), and the price is low.

Unlike most monitors, those with full-page displays orient their 15-inch screens vertically. Most monitors in this class have pixel dimensions of 640 by 870 (plus or minus a pixel or two) and can display a full, US Letter-size page. Wordsmiths and others who think in 8½-by-11-inch chunks find full-page displays a nice compromise between the somewhat confined small displays and the more expensive two-page displays.

Two-page displays have, for the most part, 19-inch and 21-inch screens and fall in two pixel-dimension groups: 1024 by 768 and 1152 by 870 or thereabouts (the pixel dimensions don't necessarily correspond to



# Quality Tests

## Brightness

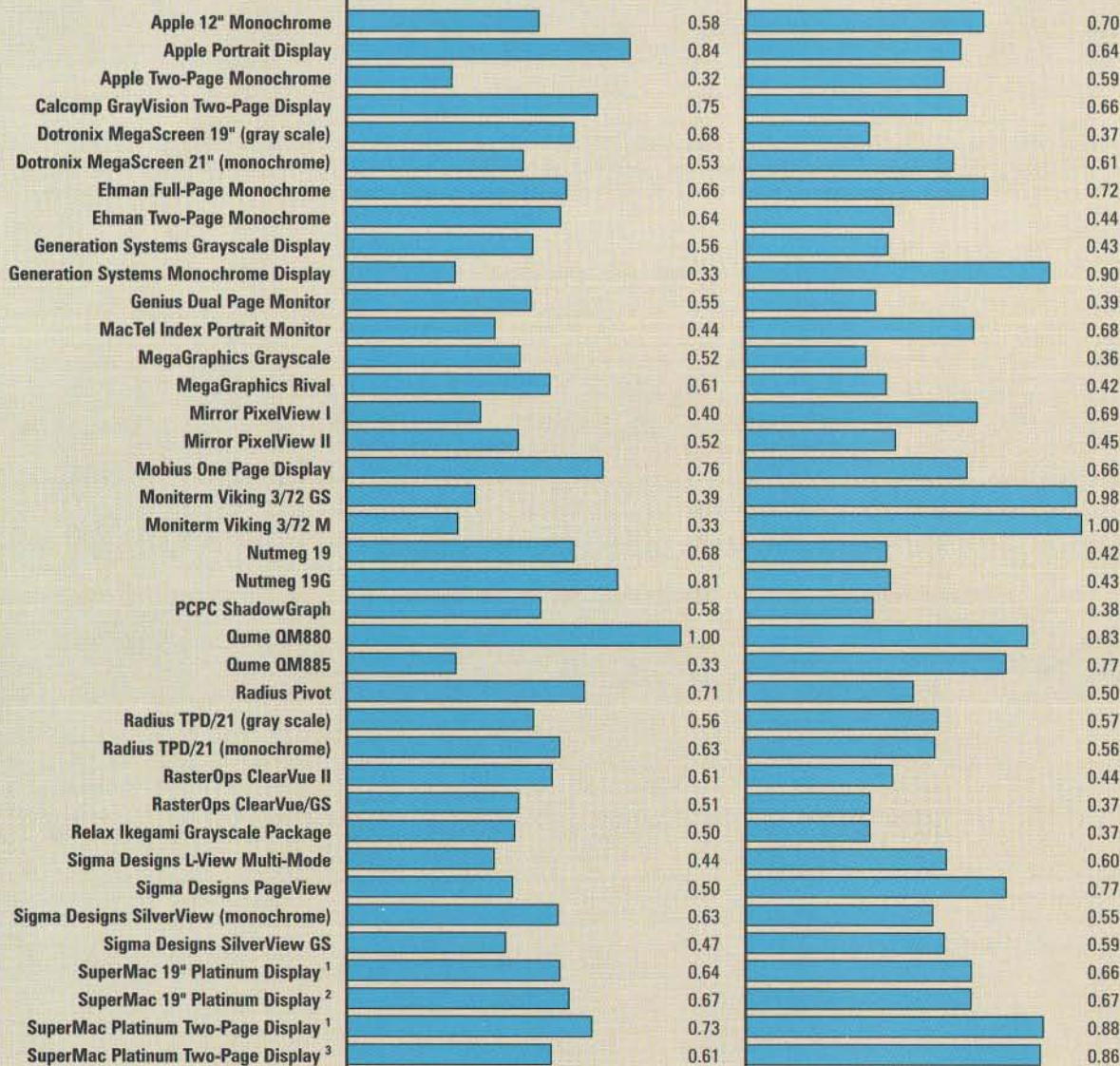
The brighter a monitor is, the more flexibility you have in adjusting it to your environment. Also, most people prefer a bright monitor. For each monitor, we turned the brightness up as high as it would go without showing scan lines. We then measured brightness using a Minolta luminance meter. The brightest monitor was the Qume QM880 at 59.54 footlamberts; the dimmest, the Apple Two-Page Monochrome at 19.04 footlamberts. All of the monitor test results were indexed relative to the QM880.

## Contrast

The better a monitor's contrast is, the better you can see details in light or dark areas of an image. High contrast also makes a monitor more appealing to look at. To measure contrast, we displayed five white squares on the monitor—one in each corner, and one in the center. We used a Minolta luminance meter to measure the ratio of the white square to the black background beside the square. We then averaged the ratios. Moniterm's Viking 3/72M had the best contrast ratio at 10.08; MegaGraphics Grayscale had the worst at 3.63. All of the monitor test results were indexed relative to the Viking 3/72 M.

## Phosphor Color

Although the monitors reviewed are black and white or gray scale, each has a distinctive color tint. Monitors that subjectively appear closest to paper white are usually a light blue according to our test instruments. The colors below are representative of the tints of the monitors we tested.



<sup>1</sup> Monochrome Card.  
<sup>2</sup> Spectrum/8 Series III.  
<sup>3</sup> Spectrum/8 PDQ.



# Solving the Monitor Mystery

## TWO-PAGE BLACK-AND-WHITE MONITORS COMPARED

Company	Dotronix	Dotronix	Ehman	Generation Systems	Genius Technologies	MegaGraphics	Mirror Technologies	Monitorm Corporation
Monitor name	MegaScreen 19 <sup>1</sup>	MegaScreen 21 <sup>1</sup>	Two-Page Monochrome	Monochrome Display	Genius Dual Page Monitor	MegaGraphics Rival	PixelView II	Viking 3/72
System price (board and monitor)	\$1499	\$1699	\$899	\$1519	\$1395	\$1698 <sup>2</sup>	\$897	\$1295
Mac SE and SE/30 compatible	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●
Mac II compatible	●	●	●	●	●	●	●	●
Other Mac compatibility	none	none	none	Classic, LC, Portable	none	Plus, LC, Portable	Plus, Classic	none
Diagonal size (in inches)	19	21	19	19	19	19	19	19
Active area (w × h, in inches)	13.7 × 11.0	15.2 × 11.3	13.9 × 10.7	14.2 × 10.6	14.2 × 10.8	13.8 × 11.0	14.2 × 10.7	14.2 × 10.6
Pixel dimensions	1024 × 768	1152 × 872	1024 × 769	1024 × 768	1152 × 872	1024 × 826	1024 × 768	1024 × 768
Pixel density (in dpi)	72	75	72	72	72	75	72	72
Vertical refresh rate (in Hz)	75	71	78	78 <sup>3</sup>	75	75	78	78
Antiglare treatment	● <sup>4</sup>	● <sup>4</sup>	○	●	○	●	●	●
Tilt-and-swivel stand included	●	●	●	●	●	●	●	●
Special features for compact Macs								
Use both screens	●	●	●	●	●	●	●	●
Adjust cursor crossover point	●	●	○	○	●	●	●	●
Display same image on both screens	○	○	○	○	○	●	○	○
Warranty period (in years)	1	1	1	1	1	2	1	1
Extended warranty available	●	●	○	○	○	●	○	●

● = yes; ○ = no. <sup>1</sup> System was not tested by Macworld Lab. <sup>2</sup> Price is \$1848 for the Mac Plus version. <sup>3</sup> 75Hz when used with the Classic. <sup>4</sup> This feature is optional.

tests rate Genius Technologies' Genius as having the worst contrast relative to its black-and-white competitors, we still find it acceptable for viewing. In Lab tests, SuperMac Technology's Platinum Two-Page Display stands out for having not only the highest brightness rating but an above average contrast ratio as well. On the other hand, Sigma Designs' L-View Multi-Mode, the Viking 3/72 M, and Generation Systems' Monochrome Display appear too dim to us. Avoid them if you work in a bright office or use a monitor for public demonstrations.

Distortion in this group is less of a problem than it once was. As we have found in past years, the upper corners of the active area often bend slightly out of shape and sometimes one side arches or bows slightly, but even the worst in this group of monitors—the SilverView and the MegaGraphics Rival—aren't bad enough for us to recommend against buying them.

Focus—a subjective quality we tested with squinty eyes and a screen full of text—varies from monitor to monitor as well as from one part of the screen to another. With large monitors, focus is most often a problem along the edges. The monitors with the best focus include the L-View

of 1024 by 768 or thereabouts. The odd monitors out are the SilverView (at 1152 by 870), the MegaScreen 21" (at 1152 by 872), and the L-View Multi-Mode, which can display six different pixel dimensions between 512 by 384 and 1664 by 1200. The L-View Multi-Mode accomplishes this trick by changing pixel densities, from a low of 36 dpi to a high of 120 dpi. Otherwise, most two-page black-and-white displays have pixel densities between 72 and 77 dpi.

Overall, Macworld Lab members and I agree that the Ehman Two-Page Monochrome is a remarkable bargain. The Genius, which is slightly more expensive, comes in a close second in the budget category. In the money-is-no-object division, our favorites are the SilverView and the 19" Platinum Display.

### Two-Page Gray-Scale Displays

We tested 14 two-page gray-scale displays, 5 with pixel dimensions in the



*In our subjective evaluation, brightness and contrast rate a good or better on almost all the monitors*

and the SilverView, the Radius TPD/21, SuperMac's 19" Platinum Display, and the Genius. The only displays unacceptable for long hours of close work are Nutmeg Systems' Nutmeg 19 and Monitorm's Viking 3/72 M.

Virtually all two-page black-and-white displays have pixel dimensions



Monitorm Corporation	Nutmeg Systems	Radius	Radius	RasterOps Corporation	RasterOps Corporation	Sigma Designs	Sigma Designs	SuperMac Technology	SuperMac Technology
Viking 3/2400 M <sup>1</sup>	Nutmeg 19	TPD/19 <sup>1</sup>	TPD/21	ClearVue/II and SE	ClearVue/XL <sup>1</sup>	L-View Multi-Mode	SilverView	19" Platinum Display	Platinum Two- Page Display
\$2090	\$1499	\$1990	\$2390	\$1795	\$2195	\$1999	\$1999	\$1898	\$2298
●/○	●/●	●/●	●/●	●/○	○/○	●/●	●/●	○/○	○/○
●	●	●	●	●	●	●	●	●	●
none	none	none	none	none	none	LC	none	none	none
24	19	19	21	19	21	19	21	19	21
18.0 × 13.0	14.2 × 10.7	14.0 × 10.7	15.5 × 11.9	14.1 × 10.4	15.0 × 11.2	14.0 × 10.1	16.0 × 12.0	14.2 × 10.6	15.0 × 11.2
1280 × 960	1024 × 768	1152 × 882	1152 × 882	1024 × 768	1152 × 870	512 × 384 to 1664 × 1200	1152 × 870	1024 × 768	1152 × 870
72	72	82	74	72	77	36, 46, 60, 72, 92, 120	72	72	77
66	78	70	70	72	75	63 to 92	73	75	75
●	●	○	○	●	●	●	○	●	●
○	●	●	●	●	●	●	●	●	●
●	●	●	●	●	NA	○	●	NA	NA
●	●	●	●	●	NA	○	○	NA	NA
○	○	○	○	●	NA	○	○	NA	NA
1	1	1	1	1	1	1	1	1	1
●	○	○	○	●	●	○	○	○	○

1152 by 870 size (SuperMac Technology's Platinum Two-Page Display, Radius's TPD/21, Sigma Designs' SilverView GS, Apple's Two-Page Monochrome, and Calcomp's Gray-Vision Two-Page Display), and the remainder in the 1024 by 768 range. Again, most pixel densities range from 72 to 77 dpi. The price spread is much greater in this group, ranging from \$1595 (for PCPC's ShadowGraph) to \$3195 (for Calcomp's Gray-Vision Two-Page Display).

In terms of phosphor color, Relax's Ikegami Grayscale Package, Radius's TPD/21, Apple's Two-Page Monochrome, and PCPC's ShadowGraph tend toward blue. The Platinum Two-Page Display, the Gray-Vision Two-Page Display, and the SilverView GS tend toward amber (see "Quality Tests").

Subjectively, the Radius TPD/21 is not bright enough for us. But the Apple Two-Page Monochrome is even less bright—dim enough, in fact, to quickly tire the eyes in bright ambient light. The brightest monitors are the Nutmeg 19G, the Calcomp Gray-Vision, the Dotronix MegaScreen 19", and SuperMac's 19" Platinum Display.

Despite its dimness, the TPD/21 ranks at the top, along with the 19" Platinum Display, in subjective tests of contrast. In general, our lab tests show that gray-scale monitors rank lower on contrast than black-and-white ones.

The active areas of the gray-scale monitors are all slightly atilt, the Dotronix MegaScreen 19" so much so that the top left edge of the menu bar is cut off. Other, minor distortions are visible in almost all monitors, the upper left corner being, as usual, the most troublesome. Overall, the worst offenders are the SuperMac Platinum Two-Page Display (which has a wavy upper border), Sigma Designs' SilverView Grayscale (which has a pronounced bow at the top), and the Dotronix 19". Less severe distortions appear in the MegaGraphics Grayscale (whose bottom border droops) and the Calcomp Gray-Vision (which curves noticeably at the sides).

While we can live with most of these distortions (the tilt of the Dotronix being a possible exception), we cannot say the same for the focus problems that some monitors display. Focus is best on the SilverView Gray-

scale, SuperMac's 19" Platinum Display, RasterOps' ClearVue/GS, and the Radius TPD/21. At the other extreme, SuperMac's Platinum Two-Page Display, Calcomp's Gray-Vision, and the Nutmeg 19G are out of focus for considerable distances from the right and left edges—so much so that we have doubts about their long-term use with text-based applications.

Altogether, for the budget minded, Lab members and I recommend either PCPC's ShadowGraph or Relax's Ikegami system; both offer reasonable quality and rock-bottom prices. There is less agreement among us concerning the money-is-no-object category. The SuperMac 19" Platinum Display tops several lists of favorites (it's definitely the one I recommend); the SilverView Grayscale tops others. And if we were asked which monitors in this group to avoid, we would pick two: SuperMac's Platinum Two-Page Display and the Nutmeg 19G.

#### Full-Page Displays

We tested eight full-page display systems, one of which, Radius's Pivot, doubles as a small horizontal display by rotating on its axis. These systems



# Solving the Monitor Mystery

## TWO-PAGE GRAY-SCALE MONITORS COMPARED

Company	Apple Computer	Calcomp	Dotronix	Dotronix	Generation Systems	MegaGraphics	Monitorm
Monitor name	Two-Page Monochrome	Gray-Vision Two-Page Display	MegaScreen 19"	MegaScreen 21"	Grayscale Display	MegaGraphics Grayscale	Viking 3/72 GS
System price (board and monitor)	\$2797	\$3195	\$2065	\$2290	\$1999	\$2548 <sup>2</sup>	\$1990
Mac SE/30 and II compatible	○/●	○/●	●/●	●/●	○/●	●/●	●/●
Diagonal size (in inches)	21	21	19	21	19	19	19
Active area (w × h, in inches)	15.0 × 11.3	15.0 × 11.3	13.7 × 11.0	16.0 × 12.0	14.2 × 10.6	13.7 × 11.0	14.2 × 10.5
Pixel dimensions	1152 × 870	1152 × 870	1024 × 826	1152 × 872	1024 × 768	1024 × 826	1024 × 768
Pixel density (in dpi)	77	72	75	75	72	75	72
Vertical refresh rate (in Hz)	75	75	69	71	75	70	75
Antiglare treatment	●	●	● <sup>4</sup>	● <sup>4</sup>	●	●	●
Tilt-and-swivel stand included	●	●	●	●	●	●	●
Special features for compact Macs							
Use both screens	NA	NA	●	●	NA	●	●
Adjust cursor crossover point	NA	NA	●	●	NA	●	●
Display same image on both screens	NA	NA	○	○	NA	●	○
Warranty period (in years)	1	1	1	1	1	2	1
Extended warranty available	●	○	○	○	○	●	●

● = yes; ○ = no. <sup>1</sup> System was not tested by Macworld Lab. <sup>2</sup> Price is \$2598 for the SE/30 version. <sup>3</sup> Price is \$1695 for the SE/30 version. <sup>4</sup> This feature is optional.

range in price from \$499 for Ehman's Full-Page Monochrome to \$1840 for Radius's gray-scale Pivot. Since they are intended primarily for text work, most full-page displays are black and white. Exceptions are Radius's Pivot, which displays up to 16 shades of gray, and Apple's Portrait Display and Qume's QM885, which can display 256 gray shades. The majority of portrait displays also have pixel densities of 78 or 80 dpi. The Nutmeg/Xerox Full Page Display, Qume's QM885, and MacTel's Index Portrait Monitor use a more standard 72 dpi; and Sigma Designs' PageView can switch among pixel densities of 72, 80, and 88, with corresponding pixel dimensions of 576 by 768, 640 by 870, and 704 by 940.

Differences in phosphor color are not nearly so noticeable as in the two-page displays (see "Quality Tests"). Apple's Portrait Display and the Qume QM885 tend toward blue, while the rest display minor variations on a bluish white. The most visually appealing of these is Mobius Technologies' One Page Display. In terms of

brightness, all the full-page displays are acceptable. Among the group, the Apple and Mobius monitors stand out as the brightest, while MacTel's Index, Mirror Technologies' PixelView I, and Qume's QM885 are the dimmest. Contrast is also good on most monitors; in Macworld Lab tests, all of the full-page displays scored in the middle

of these departures from true linearity are distressingly distracting. What I do sometimes find unpalatable, however, is the curvature of the long axis of the video tube itself. The Qume, Sigma Designs, Apple, Radius Pivot, and Mobius portrait displays all use superflat tubes that largely avoid the problem. The MacTel, Ehman, and

Mirror displays, on the other hand, use a more convex tube, which makes the screen appear as if it were bending over backward; if you're considering buying one of these three, check to be sure the curve of the screen doesn't irritate you.

With the exception of Mirror's PixelView I, which has unacceptably poor focus, all the portrait displays have very good

*With one exception, all the portrait displays have very good focus—a cut above that in two-page displays*

of the pack or better. Subjectively, however, we thought that the PixelView I and the Index fall below par, the PixelView I especially so.

Generally, distortion along the sides of full-page displays is more noticeable than in two-page displays. Although Sigma Designs' PageView has the most noticeable distortion, none

focus—a cut above that in the two-page displays, in fact. Best of the lot are Mobius's One Page Display and Ehman's Full-Page Monochrome. It's a little-known fact that pixel size and shape differ from monitor to monitor. Since character strokes are often no more than one or two pixels wide, text that's bold and easy to read on



Nutmeg Systems	PCPC	Radius	Radius	RasterOps Corporation	Relax Technology	Sigma Designs	SuperMac Technology	SuperMac Technology
Nutmeg								
19G	ShadowGraph	TPD/19 <sup>1</sup>	TPD/21	ClearVue/GS	Ikegami Gray-scale Package	SilverView Grayscale	19" Platinum Display	Platinum Two-Page Display
\$1899	\$1595 <sup>1</sup>	\$2790	\$3190	\$2195	\$1659	\$2399	\$2398	\$2798
●/●	●/●	●/●	●/●	○/●	○/●	○/●	○/●	○/●
19	19	19	21	19	19	21	19	21
14.2 × 10.7	14.0 × 10.8	14.0 × 10.7	15.5 × 11.9	14.4 × 10.8	14.3 × 10.4	16.0 × 12.0	14.2 × 10.6	15.0 × 11.2
1024 × 768	1024 × 768	1152 × 882	1152 × 882	1024 × 768	1024 × 768	1152 × 870	1024 × 768	1152 × 870
72	72	82	74	72	72	72	72	77
78	75	70	70	75	68	73	75	75
●	●	○	○	●	●	○	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	NA	NA	NA	NA	NA
●	○	●	●	NA	NA	NA	NA	NA
○	○	○	○	NA	NA	NA	NA	NA
1	1	1	1	1	1	1	1	1
○	○	○	○	●	○	○	○	○

some monitors can appear fuzzy or anemic on others. Thus, because full-page displays are most often used for text work, we also rated these monitors—purely subjectively—for text display. The members of the Lab and I judge the Ehman, Apple, Mobius, and Sigma Designs full-page displays to be the most readable. Text on the others is, we feel, either too light or insufficiently sharp.

Overall, we find it difficult to choose between the Ehman, Apple, Mobius, and Sigma Designs full-page displays. For the bargain hunter, the Ehman's price can't be beat. The Mobius is a little more expensive, and it's very bright, very sharp, very easy on the eyes. The Apple display is, well, predictably Apple: very good quality, though perhaps not the best, and rather expensive. Sigma Designs' PageView is also relatively expensive; the extra expense is worth it if you need the flexibility of three different pixel densities.

#### Small Displays

We tested three small displays, the Apple 12" Monochrome and two 15-inch displays, Qume's QM880 and Radius's Pivot (in its horizontal orientation). The Pivot can produce 16



For small monitors, Apple's 256-gray-scale 12" Monochrome monitor (left) was easily our favorite. For full-page displays, Ehman's Full-Page Monochrome (right) is the least expensive and offers solid quality. But we also like the Portrait Display from Apple, Mobius's One Page Display, and Sigma Designs' PageView (not shown).



# Solving the Monitor Mystery

## FULL-PAGE AND SMALL MONITORS COMPARED

Company	FULL PAGE MONITORS Apple Computer	Ehman	Generation Systems	Genius Technologies	MacTel Technology Corporation	Mirror Technologies
Monitor name	Portrait Display	Full-Page Monochrome	15" One-Page Display	Genius Full Page Monitor <sup>1</sup>	Index Portrait Monitor	PixelView I
System price (board and monitor)	\$1747	\$499	\$999	\$849 <sup>2</sup>	\$579	\$497
SE and SE/30 compatible	○/○	●/●	●/●	●/●	●/●	●/●
Mac II compatible	●	●	●	●	●	●
Other Mac compatibility	none	Plus, Classic	LC, Classic, Portable	none	none	Plus, Classic, Portat
Maximum number of gray levels	256	2	2	2	2	2
Diagonal size (in inches)	15	15	15	15	15	15
Active area (w × h, in inches)	7.8 × 11.0	7.8 × 10.5	7.8 × 10.4	7.7 × 10.4	7.9 × 10.5	8.0 × 10.9
Pixel dimensions	640 × 870	640 × 870	640 × 870	640 × 872	640 × 870	640 × 870
Pixel density (in dpi)	80	80	80	80	72	80
Vertical refresh rate	75	75	75	70	75	75
Antiglare treatment	●	○	○	●	●	●
Tilt-and-swivel stand included	● <sup>4</sup>	●	●	●	●	●
Special features for compact Macs						
Use both screens	NA	●	●	●	●	●
Adjust cursor crossover point	NA	○	●	●	● <sup>5</sup>	●
Display same image on both screens	NA	○	○	○	○	○
Warranty period (in years)	1	1	1	1	1	1
Extended warranty available	●	○	○	○	○	○

● = yes; ○ = no. <sup>1</sup> System was not tested by Macworld Lab. <sup>2</sup> Mobius One Page Display 030 is \$995 and includes an accelerator. <sup>3</sup> Gray-scale version is \$1840; IIsi and IICI version \$1295.

shades of gray; it has pixel dimensions of 864 by 640 and a pixel density of 78 dpi. The other two monitors display up to 256 gray shades and have significantly smaller pixel dimensions of 640 by 480. Qume's pixel density is a standard 72 dpi; the Apple monitor's higher pixel density—76 dpi—allows it to squeeze the same pixel dimensions onto a smaller screen.

The Qume QM880 has a white phosphor color with a very subtle purple cast. In comparisons that include the larger gray-scale monitors as well, we rate it as among the best in brightness and contrast. Large out-of-focus areas make us question the QM-880's suitability for text work, however, and significant distortion (which results in oval-shaped circles, for example) is also a drawback. Factoring in its moderately high price, we cannot recommend the QM880.

As with all Radius monitors, the Pivot's phosphor color is on the blue side. In terms of brightness, contrast, focus, and distortion, the Pivot rates well, although never as good as the

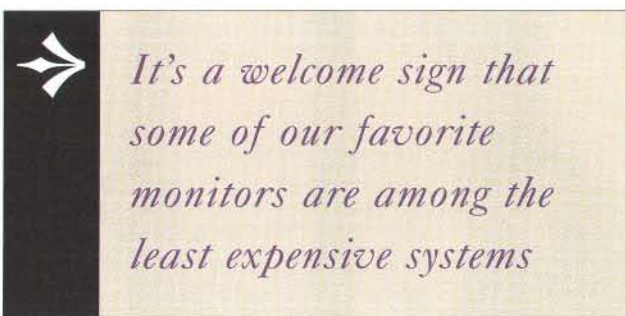
best. Lab members and I don't particularly care for the way it displays text; we find text strokes too thin, and vertical elements are often ghosted with a faint double image. The Pivot is the most expensive of the three small-screen monitors; for the extra money, you get larger pixel dimen-

chrome is an undeniable bargain. With a video board, the price approaches the QM880's, but we found the paper-white Apple display superior in almost all respects. It is one of the brightest gray-scale monitors we looked at; it has excellent contrast and focus, and negligible distortion; and it's about as compact a monitor as we've seen. Overall, we have no difficulty picking the Apple display as our first-choice small monitor.

### Mac SE, SE/30, and Classic Displays

Many of the monitors described above can be used as a second monitor for the SE, SE/30, and

Classic as well as with the Mac II family. In general, a monitor's attributes are largely independent of the board that runs it and the computer it is hooked up to. The only exception to this rule is brightness—some boards are tuned to drive a monitor more brightly than others are. Since brightness differences are usually relatively minor (about 2 to 3 foot-lamberts, or 5 to 10 percent), how-



sions and a monitor that—when tilted upright—doubles as a full-page display. (With few exceptions the screen automatically redraws to fit the current orientation each time the Pivot is tilted.) Although it's not the best in either the small-screen or full-page categories, it's cheaper than buying one of each.

If you have a Macintosh with on-board video, Apple's 12" Mono-



Mobius Technologies	Nutmeg Systems	Qume Corporation	Radius	Sigma Designs	SMALL MONITORS Apple Computer	Qume Corporation
Mobius One-Page Display	Nutmeg/Xerox Full Page Display <sup>1</sup>	QM885	Pivot	PageView Multi-Mode	12" Monochrome	QM880
\$795 <sup>2</sup>	\$999	\$1069	\$1694 <sup>3</sup>	\$1199	\$947	\$1099
●/●	●/●	○/○	○/●	●/●	○/○	●/○
●	●	●	●	●	●	●
none	none	none	none	Classic	none	none
2	2	256	16 <sup>3</sup>	2	256	256
15	15	15	15	15	12	15
8.2 × 11.0	8.0 × 10.0	8.3 × 10.4	8.3 × 11.1	8.0 × 10.7	8.4 × 6.3	9.4 × 7.8
640 × 872	606 × 760	640 × 872	864 × 640,	576 × 768, 640 × 870,	640 × 480	640 × 480
78	72	72	78	72, 80, 88	76	72
75	76	68	69	80 to 97	67	66
●	●	●	○	● <sup>4</sup>	●	●
●	●	●	●	●	● <sup>4</sup>	●
●	●	NA	●	●	NA	○
●	●	NA	●	○	NA	○
○	○	NA	○	○	NA	○
1	1	1	1	1	1	1
●	○	○	○	○	●	○

<sup>1</sup> This feature is optional. <sup>2</sup> Only on the SE/30 system.

ever, the favorites I've already picked apply to SE and SE/30 systems as well.

When purchasing a second screen for a compact Mac, the software that makes it function properly can be an important consideration. Most drivers allow you to use both screens at the same time (Sigma Designs' L-View is one that does not), while in a few systems, such as the MegaGraphics Rival and RasterOps' ClearVue/SE, you can display the same view on both screens at the same time (for a live demonstration, say). All allow you to specify whether the Mac screen is to the left or the right; only in some, however, can you adjust the cursor crossover point so that it matches the actual vertical relationship of the two monitors.

Keep in mind that large screens attached to an SE are usually sluggish due to the SE's slower overall speed. You need to purchase a compatible accelerator if you want to pep things up. (MegaGraphics claims that its Rival monitor is unique in being compatible with all available accelerators.) Notable exceptions to this are the RasterOps ClearVue and the Mobius One Page Display, both of which include acceleration—at no

extra charge—as part of the standard SE system.

As this article goes to press, only two companies are shipping display systems for the Mac Classic. Generation Systems offers two black-and-white systems: a 19" Monochrome Display and a 15" One Page Display system. Mirror offers versions of its PixelView I and II systems for the Classic; the display characteristics and prices are the same as for the other configurations. RasterOps had announced that a Classic version of its ClearVue system would ship by spring. We did not test any of these Classic systems, but we feel safe in saying that monitor quality will be comparable to that in the corresponding Mac II and SE systems.

#### Final Cut

It wasn't that long ago that you had to pay top dollar for a monitor that didn't give you a headache. It is thus a welcome sign that there are excellent, budget-priced choices in every monitor category, and that some of our favorites are among the least expensive. For those interested in a lot of real estate, we recommend two black-and-white two-page displays. At

\$899, Ehman's Two-Page Monochrome display is an excellent buy for the Mac owner on a budget; for those with deep pockets, Sigma Designs' SilverView (\$1999) is our top pick. For gray-scale two-page displays, PCPC's ShadowGraph (\$1595) topped the list in the budget category. But if money were no object, we'd buy SuperMac's 19" Platinum Display (\$2399).

If you want a full-page display, we recommend the Ehman; it's rare to find such high quality and low price (\$499) in the same monitor. And if you need only a relatively small monitor, Apple's new 12" Monochrome Display is an unbeatable bargain (\$299 for the monitor alone) if your Macintosh has on-board video. Macintosh godfather Steve Jobs would no doubt approve that larger monitors are, more than ever before, within reach of the rest of us. **M**

See *Where to Buy*, under Monochrome Monitors, for contact information.

.....  
**Robert C. Eckhardt** is a Macworld contributing editor and author of *The Fully Powered Mac (Brady)* and *Inside Word for the Macintosh (Brady)*.



---

*Personal*

---

# PAGE PRINTERS ARRIVE

A new  
generation  
of printers  
and software  
provides  
affordable  
laser-quality  
output

*by Jim Heid*

If you long for a laser printer but are waiting to buy until prices fall, prepare to reap your reward. The past year marked the birth of the Volkslaser. Apple, QMS, GCC Technologies, NEC, Texas Instruments, and others unveiled new 300-dots-per-inch laser printers aimed at individuals and small businesses. For retail prices between \$999 and \$3455, you

can buy a printer that provides more fonts, better print quality, and faster performance than Apple's original \$6995 LaserWriter.

This article discusses issues you should consider when shopping for a personal laser printer. "Personal Printer Profiles" and "Rating Personal Printers" show comparisons of the 12 printers I tested.

If even \$999 exceeds your definition of affordable, take heart. Apple's petite new StyleWriter ink-jet printer has joined the Hewlett-Packard DeskWriter in offering print quality that approaches that of a laser printer—for well under \$1000 (see "The Ink-Jet Challenge to Laser Printers"). (For more details on the StyleWriter and Apple's new Personal LaserWriter LS, see *Macworld News* in this issue.)

## **QuickDraw, PostScript, or Both?**

The search for the right personal laser printer begins with a selection between printers that rely on Adobe Systems' PostScript page-description language and those that rely on QuickDraw, the Mac's built-in library of text- and graphics-display routines.

Either a PostScript or a QuickDraw printer can handle text-oriented documents such as correspondence, manuscripts, and contracts. But for printing desktop publications, illustrations, scanned images, and other graphics-intensive jobs, choose a PostScript printer. Built-in networking features also make a PostScript printer almost essential if you have more than one computer (whether Mac or IBM PC).

PostScript printers often operate more quickly because they relieve the Mac of most of the work involved in printing a page. PostScript printers offer so many advantages—some technical, some byproducts of PostScript's popularity—that it's hard to imagine choosing any other kind of printer.

Until you compare prices. PostScript printers cost more than comparable QuickDraw printers, due to their more-sophisticated controller circuitry and the licensing and royalty fees Adobe Systems charges printer manufacturers. For example, GCC Technologies' QuickDraw-based PLP II retails for \$999; its PostScript-driven cousin, the BLP II, sells for



Front runners: The  
Apple Personal  
LaserWriter LS (top)  
and the QMS-PS 410.





**A1 NEWS FLASH!**

The quick brown fox ju

Film at eleven.

**A2 NEWS FLASH!**

The quick brown fox ju

Film at eleven.

**B1 NEWS FLASH!**

The quick brown fox ju

Film at eleven.

**B2 NEWS FLASH!**

The quick brown fox ju

Film at eleven.

**C NEWS FLASH!**

The quick brown fox ju

Film at eleven.

**Seeing Is Believing** With ink-jet printers, paper quality often dictates output quality. Figures A1 and A2 show output from the HP DeskWriter, using two brands of photocopier paper. Note the variations in clarity (darkness also varies, but it cannot be demonstrated clearly in a magazine). Figures B1 and B2 show output from the Apple StyleWriter. The crisp performance seen in Figure B2 could be achieved only with high-quality bond paper. In contrast, Figure C shows the sharp, bold output delivered by a Canon LX laser engine on the same paper that produced the poorest results with ink-jet printers.

\$1999. The extra cost is easier to justify if you plan to share the printer among several machines, but most people who are shopping for a personal page printer don't have sharing in mind.

The good news is that the chasm in capabilities between PostScript and QuickDraw printers has narrowed. Apple's March release of TrueType fonts for System 6.0.7 made a difference, but ironically, Adobe deserves most of the credit. Its \$99 Adobe Type Manager (ATM) utility gives QuickDraw printers access to thousands of PostScript fonts, and lets them print those fonts in almost any size. And Adobe's Type Align program works with ATM to enable you to skew and distort text, attach it to a curving baseline, and create other exotic effects that previously were beyond QuickDraw's capabilities.

Even with TrueType, ATM, and Type Align, however, QuickDraw printers deliver inferior results with PostScript-oriented drawing programs, such as Aldus FreeHand and Adobe Illustrator. Still, you can bridge even that gap by using PostScript-emulation software such as QMS's UltraScript (see "The PostScript-Emulation Approach"). Printing via a PostScript emulator is almost always slower than using a true PostScript printer, but unless you happen to be independently wealthy, printing performance often takes a back seat to affordability.

#### Evaluating Engines

Deciding between QuickDraw and PostScript is only half the job of finding the right printer. *Print engines*, the mechanisms that shuttle paper and produce images on it, also vary widely.

The name *laser printer* derives from the use of lasers in the print engine to expose images on photosensitive drums or belts, which then attract fine plastic toner powder and apply it to the paper. (Several so-called laser printers actually use light sources other than lasers. Technically, the correct term for all these beasts is *page printer*.) As the paper leaves the printer, a pair of heated rollers melts the powder into place, much as in a photocopier.

And like photocopiers, laser printers offer different paper-handling speeds and capacities. Personal-printer engines can push paper at 4 to 8 pages per minute (ppm). You see these higher speeds, however, only when printing multiple copies of the same document or very simple documents, such as manuscripts, in a single font and size.

As for paper capacities, most personal printers provide a single 100- to 250-sheet paper tray. Apple's Personal LaserWriter NT and Fujitsu's RX-7100PS break the pattern by providing two paper sources—handy for mixing letterhead and envelopes, or for just cutting down on feeding sessions.

Speaking of feeding, a printer's toner supply requires replacement every few thousand pages. Some manufacturers supply multipart kits that can lead to messy spills.

Canon-built engines, which are found in Apple, QMS, and Hewlett-Packard printers, use a convenient, single-cartridge system. Although these disposable cartridges are an environmentalist's nightmare, you can recycle cartridges—and save money in the process. (For recycling information, try the American Cartridge Recycling Association [305/539-0701] or the International Computer Products Remanufacturing Association [503/222-3215].)

#### Judging Performance Factors

A printer's controller and its engine each play a role in determining general performance. Therefore, you should consider the types of documents you plan to print, then choose the printer whose controller and engine suit those jobs best.

With QuickDraw printers such as Apple's Personal LaserWriter LS and SC and GCC's PLP II and IIs, your job is relatively easy. Because the Mac acts as the controller, the printer's speed at handling complex jobs containing lots of fonts and graphics depends on the speed of the Mac. If such jobs slow the printer to a crawl, you can boost performance by endowing the Mac with more memory or an accelerator board upgrade. (The upgrades pay performance dividends even when you aren't printing.)

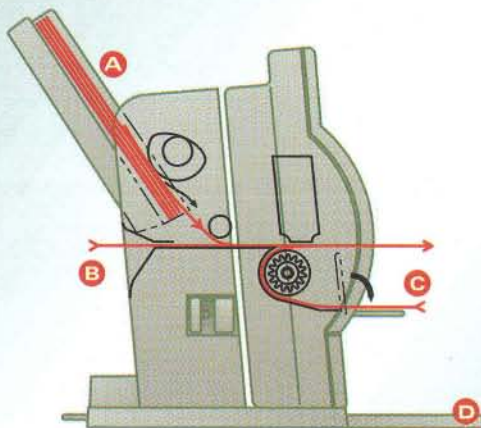


## THE INK-JET CHALLENGE TO LASER PRINTERS

**I**nk-jet printers straddle the fence between laser printers and inexpensive dot matrix printers. Like a dot matrix printer, an ink-jet printer contains a simple print mechanism, the core of which is a print head that glides back and forth, applying ink as the paper advances. A dot matrix print head uses fine wires that strike an inked ribbon to transfer ink to the page, whining all the while. In contrast, an ink jet silently sprays fine streams of ink at the paper (see "Inside an Ink-Jet Printer").

Like a laser printer, an ink-jet printer is a nonimpact device. It can't print on multipart forms. A more important similarity is that ink jets can produce laserlike resolution.

Still, ink-jet output isn't in the laser league. Up close, the naked eye easily discerns sloppy character edges created by ink seeping into the paper's fibers as it dries. Also, scanned images and large black areas show a mottled look. You can minimize these flaws by photocopying printed pages, but be patient—it's easy to smear ink-jet output in its first few seconds of life.



Apple's StyleWriter offers three distinct paper paths. For multi-page documents, the detachable sheet feeder (A) holds up to 50 pages. You can feed in card stock or envelopes from the rear of the printer (B), with or without the sheet feeder in place. For single pages of standard-weight paper, a front-loading slot (C) starts the page on its round-trip through the mechanism. In all cases, finished pages fall into a retractable output tray (D).

Today's ink-jet printers no longer require special paper, as did some pioneering models of the mid-'80s, but they are still more finicky than lasers. Apple's StyleWriter and Hewlett-Packard's DeskWriter can't handle heavy card stocks and can't automatically feed multiple envelopes. Output quality also varies dramatically depending on the quality of paper you use (see "Seeing Is Believing"). And be advised: most personal laser printers churn out several pages in the time an ink-jet printer produces one.

The StyleWriter and HP's DeskWriter are the only two Mac-specific ink-jet printers that produce 300-dpi or sharper output. (GCC's 3-pound, \$549 WriteMove prints 192 dpi.) The StyleWriter retails for \$599, and strong initial demand will probably keep street prices nearly that high. The DeskWriter retails for \$995, but street prices hover around \$700.

Last May, HP equipped the DeskWriter with an AppleTalk connector, allowing it to be shared on a network. The StyleWriter lacks this capacity. It connects via a serial cable to the Mac's modem or printer port. Neither printer supports background printing under MultiFinder, but both are compatible with third-party spoolers.

The DeskWriter includes four font families (Computographic versions of Helvetica, Times, Courier, and Symbol); an optional font pack includes seven additional families. All fonts are outlines, and HP's easily installed driver software can scale them to any size up to 250-point. The printer also works so well with Adobe



Apple StyleWriter

Type Manager that some mail-order firms sell the pair together.

The StyleWriter—also ATM-compatible—includes the same four font families, but the fonts are Apple TrueType outline fonts, which can be scaled to sizes larger than 250-point.

In tests performed by Macworld Lab on a prototype, the StyleWriter ran at about half the speed of the DeskWriter—hardly a rocket itself. If you seek portability, however, consider this: when Apple previewed the 5-pound StyleWriter for *Macworld*, the product manager unveiled the printer by pulling it out of a DeskWriter's case.

The StyleWriter also holds another important edge: its 360-dpi resolution produces output noticeably sharper than that of a DeskWriter. Still, the StyleWriter falls short of the deep, rich blacks that laser printers provide. And a moistened finger can smear StyleWriter output like tears smear mascara.

The StyleWriter's lower price, TrueType fonts, and higher resolution make it the better printer, but the DeskWriter isn't out of the running. The StyleWriter's product manager acknowledges that HP's latest inks are less prone to smearing. And although the DeskWriter is far too slow to serve a large network, it can keep up with a couple of patient small businesses.



With PostScript printers, the Mac's speed plays a very small role in determining performance. If you print short but complex documents—lots of fonts and sizes, large scanned images, PostScript graphics—a printer with a fast controller, such as QMS's PS 410, will outperform a printer with a slower controller but a fast engine, such as GCC's BLP IIs. For simple but lengthy documents—manuscripts, personalized form letters—a printer with a fast engine serves you better (see "Personal Printer Performance").

### Optimal Control

Several factors influence the performance of a PostScript printer's controller. The type of central processing unit used in the controller and the speed at which it runs govern how quickly the controller performs the many calculations involved in producing a page. Nearly all personal PostScript printers use a Motorola 68000 CPU running at speeds of between 10MHz and 16MHz. (QMS's swift little PS 410, however, uses the faster 68020, often found in higher-priced lasers, including Apple's LaserWriter IINTX.)

The controller's internal memory also influences performance. More memory allows faster service on typographically complex documents, because the printer can retain, or *cache*, more character bitmaps, eliminating the need to reconstruct those characters from the original font outlines if they're needed again. More memory also allows the printer to hold more *downloadable* fonts—those stored on the Mac's hard drive and transferred to the printer during the print job.

Built-in memory gains importance when mixing downloadable PostScript fonts and TrueType outline fonts. In System 7.0, Apple's TrueType *rasterizing* software (which generates characters in the sizes needed for a given page) will download into a PostScript printer's memory during the print job. The TrueType rasterizer requires about 50K of printer memory, leaving less room for downloadable PostScript fonts. The memory crunch hits hardest in the 1.5MB version of the TI's microLaser.

Adobe Systems continually refines the PostScript-interpreter software sold to printer vendors. The latest

PostScript versions usually include the Adobe Type Manager font rasterizer. All else being equal, a printer that contains ATM routines prints text faster than one that doesn't.

(Incidentally, do not confuse the ATM rasterizing routines with the ATM utility mentioned earlier. The ATM utility runs on the Mac and provides sharp characters for the screen and for QuickDraw printers. ATM rasterizing software resides in a PostScript printer's controller.)

### Low-Budget PostScript

Do not rule out the PostScript clones—printers that understand PostScript but use non-Adobe PostScript interpreters. In the personal printer market, such clones include Abaton's LaserScript; Qume's Crystal-Print Publisher II; and the forthcoming Microtek TrueLaser, Abaton LaserScript LX, and LaserMax Systems' LaserMax 400. Clone vendors usually claim faster performance than that of even the high-end Adobe PostScript printers, such as Apple's LaserWriter IINTX.

Reality sometimes betrays those claims. In my experience, PostScript

## PERSONAL PRINTER PROFILES

	Abaton LaserScript	Apple Personal LaserWriter LS	Apple Personal LaserWriter NT	Apple Personal LaserWriter SC	Fujitsu RM1100PS	GCC BLP IIs <sup>1</sup>	GCC PLP II <sup>2</sup>
<b>SPECIFICATIONS</b>							
Imaging language	PostScript-compatible	QuickDraw	PostScript 51.8	QuickDraw	PostScript 50.3	PostScript 52.3	QuickDraw
Uses Adobe PostScript interpreter	no	NA	yes	NA	yes	yes	NA
Processor/speed	NS32CG16/15MHz	NA/NA	68000/12MHz	68000/7.45MHz	68000/12.5MHz	68000/16MHz	NA/NA
Number of included fonts	35	13	35	4	35	35	22
Memory in base model	3MB	512K	2MB	1MB	2MB	2MB	none
Memory expansion upgrades	to 6MB	none	to 8MB	none	to 4MB	to 4MB	to 1MB
Print engine	TEC 1305	Canon LX	Canon LX	Canon LX	Fujitsu M3701	Oki OL-800	Oki OL-400
Maximum speed (in ppm)	6	4	4	4	5	8	4
Paper capacity (in sheets)	150	50	main tray, 250; multipurpose tray, 50	main tray, 250; multipurpose tray, 50	each tray, 150 (two trays total)	200	200
Consumable components	toner cartridge, drum unit	drum and toner cartridge	drum and toner cartridge	drum and toner cartridge	process cartridge, ozone filter	toner, EP magazine	toner, EP magazine
Pages between replacement	toner cartridge, 1500; drum unit, 10,000	3500	3500	3500	cartridge, 6000; filter, 36,000	toner, 2500; EP magazine, 15,000	toner, 2500; EP magazine, 15,000
Cost of replacement	toner cartridge, \$45; drum unit, \$150	\$99	\$99	\$99	cartridge, \$185; filter, \$15	toner, \$33; EP magazine, \$289	toner, \$33; EP magazine, \$289
Optional paper accessories	Legal and envelope cassettes	Legal and envelope cassettes; 250-sheet tray	Legal and envelope cassettes	Legal and envelope cassettes	face-up stacker	Legal, A4, B5, and envelope cassettes	Legal, A4, B5, and envelope cassettes
List price	\$2995	\$1299	\$2599	\$1999	\$3190	\$2899	\$999

<sup>1</sup> This printer is also available in 4-ppm model, called the BLP II, for \$1999. <sup>2</sup> This printer is also available in 8-ppm model, called the PLP IIs, for \$1499.



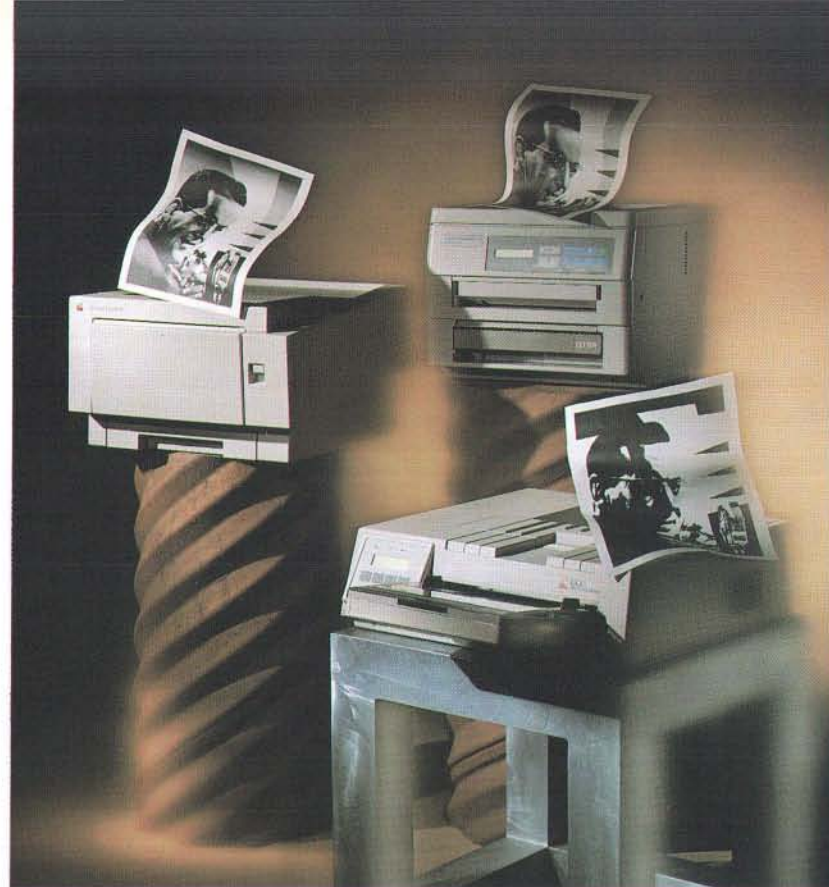
clones are faster for typographically complex documents and object-oriented (MacDraw-type) graphics but lag when printing bitmapped graphics, especially scanned images.

In the past, PostScript clones had serious problems handling *Type 1* fonts, the downloadable font format used by Adobe and many other font developers. Type 1 fonts contain instructions that the printer's controller uses to optimize the appearance of each character at a given size. Adobe encrypts these instructions, also called *hints*, and clone developers were loath to crack the code, fearing lawsuits from Adobe.

Adobe recently published most of the Type 1 specifications, however, and clone vendors have decrypted most hints. Today's PostScript clones still don't handle Adobe Type 1 fonts as skillfully as Adobe PostScript interpreters do, but the differences are becoming difficult to discern, even under magnification.

### PC Patch Jobs

Laser and ink-jet printers designed for the IBM PC world often cost considerably less than their Macintosh-spe-



Tough competitors: Clockwise from top, the Texas Instruments microLaser PS35, the GCC PLP II, and the Apple Personal LaserWriter NT.

cific cousins. If you're willing to stray from the pack and deal with occasional incompatibilities, you can get that laser look by using a PC scribe

with a Mac. You merely need the proper cable, and driver software that the PC printer can understand.

For software, use a QuickDraw-based driver package such as JetLink Express or MacPrint, or a PostScript emulator such as QMS UltraScript.

In the past, third-party PC printer drivers experienced serious application compatibility problems when connected to Macintoshes. Fortunately, with the proliferation of QuickDraw-based laser and ink-jet printers, application developers have begun to adapt to Apple's programming guidelines. But pages of caveats and workarounds still pollute the JetLink Express and MacPrint manuals, so verify compatibility with your favorite programs before you buy.

### Personal Picks

Among the printers I evaluated, one stands above the rest: the \$2795 QMS-PS 410. The PS 410 combines the easy-to-set-up Canon LX engine with a 16MHz, 68020-based controller that handles complex documents as swiftly as a \$5999 LaserWriter IINTX. The QMS-PS 410 also includes excellent documentation.

This machine works seamlessly for offices with both Macs and PCs,

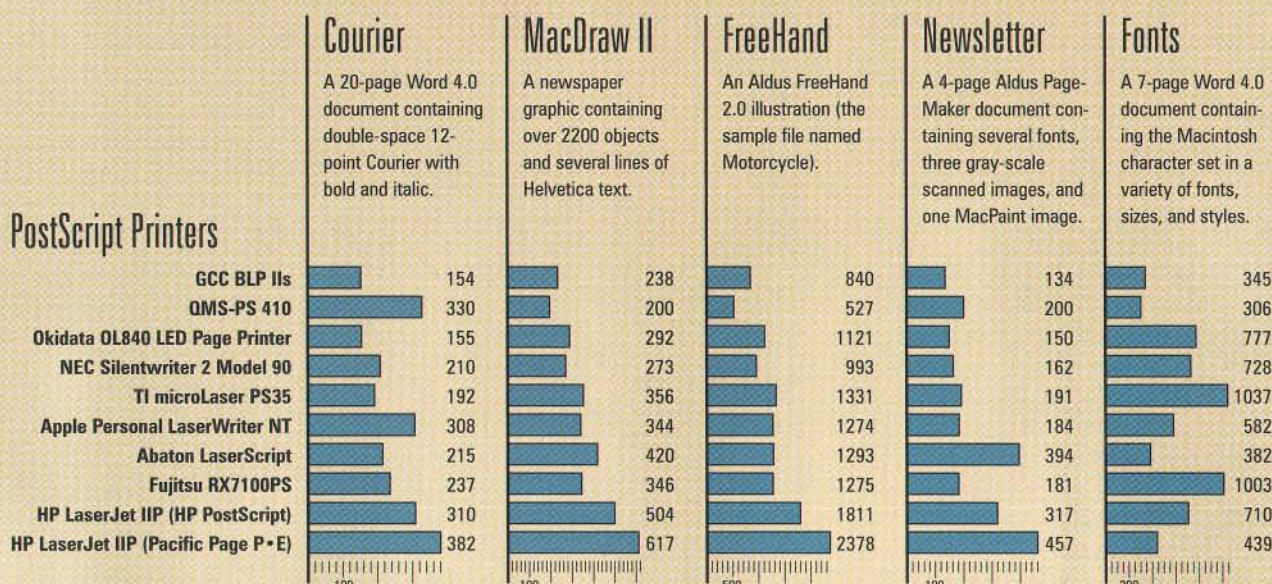
HP LaserJet IIP (HP PostScript)	NEC Silentwriter 2 Model 90	Dixdata DL840 LED Page Printer	QMS-PS 410	Texas Instruments microLaser PS35
PostScript 52.2	PostScript 52.2	PostScript 51.8	PostScript 52.4	PostScript 52.1
yes	yes	yes	yes	yes
68000/10MHz	68000/16MHz	68000/12MHz	68020/16MHz	68000/12MHz
35	35	35	45	35
2MB	2MB	2MB	2MB	1.5MB
to 4.5MB	to 4MB	to 4MB	to 6MB	to 4.5MB
Canon LX	Minolta	Oki OL-800	Canon LX	Sharp 9500
4	6	8	4	6
50	250	200	50	250
drum and toner cartridge	EP cartridge	toner, EP magazine	toner and drum cartridge	OPC cartridge, developer, toner
3500	6000	toner, 2500; EP magazine, 15,000	3500	OPC cartridge, 40,000; developer, 20,000; toner, 3000
\$99	EP cartridge, \$240	toner, \$33; EP magazine, \$289	\$99	OPC cartridge, \$189; developer kit, \$149; toner kit, \$69
250-sheet cassette	face-up stacker	second 200- sheet tray	250-sheet cassette	second tray, envelope feeder
\$2195	\$2495	\$2995	\$2795	\$2849



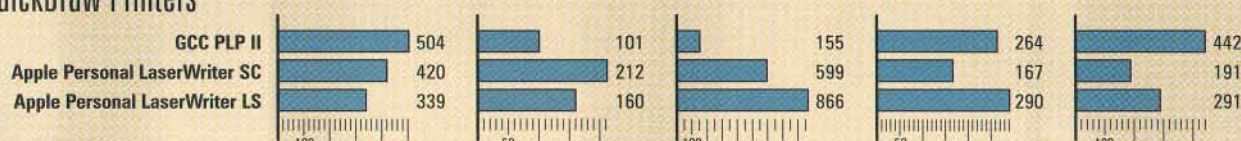
# Personal Printer Performance

All times are in seconds

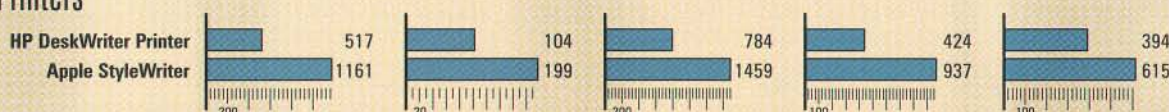
## PostScript Printers



## QuickDraw Printers



## Ink-Jet Printers



Be aware that speed and print quality often conflict. For example, the GCC PLP II boasts by far the fastest performance on the FreeHand test—but produces output inferior to that of most other printers tested. With QuickDraw printers, speed

varies directly with the speed of the Mac running the printer. For these tests, we used a Mac II with 5MB of RAM, MultiFinder turned off, and no cache.

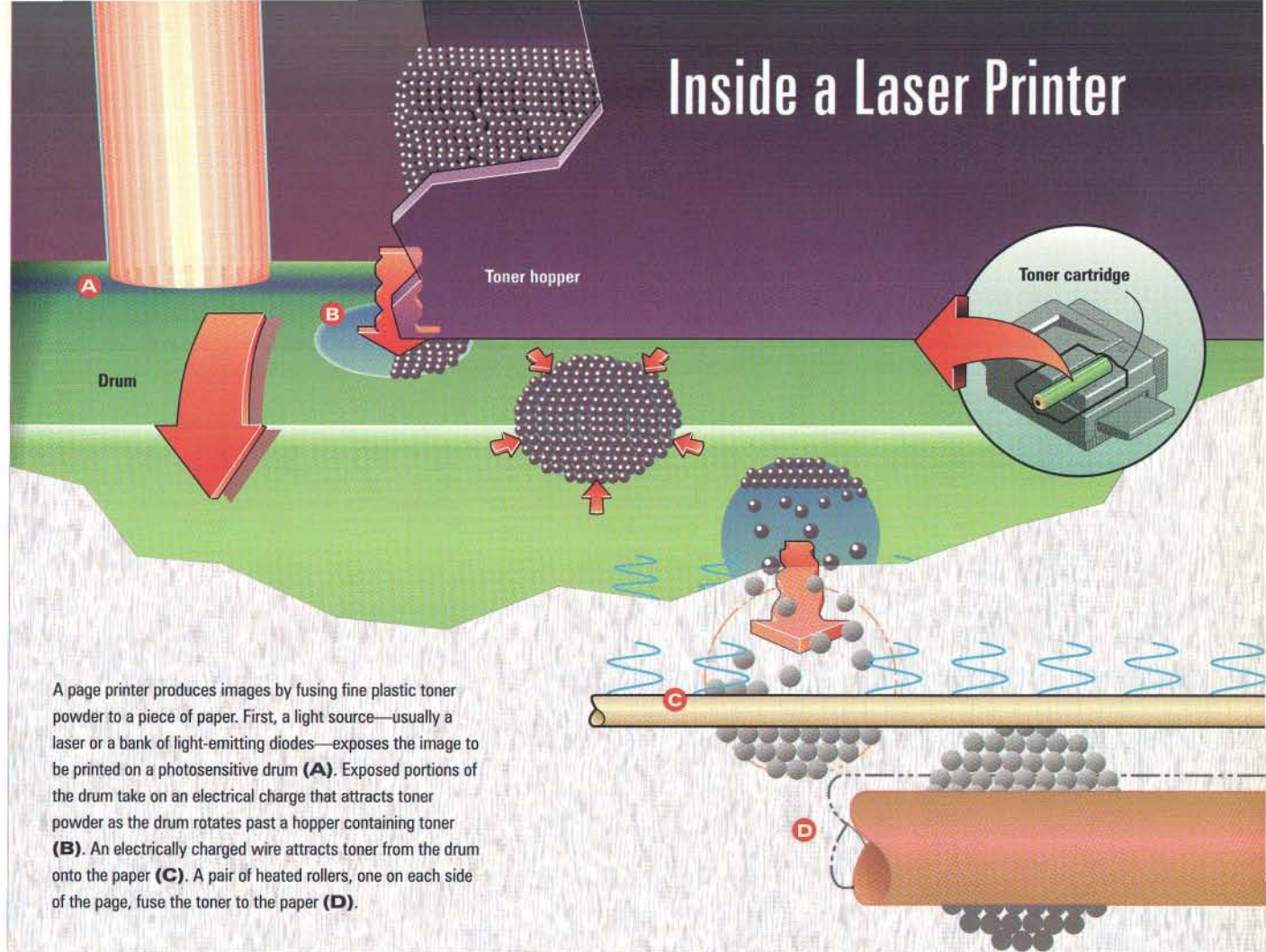
## RATING PERSONAL PRINTERS

	Abaton LaserScript	Apple Personal LaserWriter LS	Apple Personal LaserWriter NT	Apple Personal LaserWriter SC	Fujitsu RX7100PS	GCC BLP IIs <sup>1</sup>	GCC PLP II <sup>2</sup>	HP LaserJet IIP (HP PostScript)	NEC Silentwriter 2 Model 90	Okidata OL840 LED Page Printer	QMS-PS 410	Texas Instruments microLaser PS35
<b>SUBJECTIVE RATINGS</b>												
Ease of setup	3	4	4	3	2	3	3	2 <sup>3</sup>	4	3	4	3
Ease of replacing consumables	3	4	4	4	3	3	3	4	4	3	4	3
Ease of printing envelopes	4	4	4	4	2	4	4	4	4	4	4	4
Documentation	4	not released	4	4	2	4	4	4	4	2	4	4
Quality of support disks	3	not released	4	4	4	4	4	4	4	1	4	4
<b>SUITABILITY-TO-TASK RATINGS</b>												
Simple text documents	4	4	3	3	4	4	3	3	4	4	3	4
Complex text documents	3	3	3	2	2	3	3	2	2	2	4	3
Complex QuickDraw illustrations	2	4	3	3	3	3	3	2	3	3	4	3
Complex PostScript illustrations	2	1	2	1	2	3	1	2	3	2	4	2
Documents containing Type 1 fonts	2	1	4	1 <sup>4</sup>	4	4	1 <sup>5</sup>	4	4	4	4	4
Desktop publishing	1	2 <sup>5</sup>	3	1 <sup>4</sup>	3	4	1 <sup>5</sup>	2	3	3	3	3

<sup>1</sup> This printer is also available in 4-ppm model, called the BLP II, for \$1999. <sup>2</sup> This printer is also available in 8-ppm model, called the PLP IIs, for \$1499. <sup>3</sup> 4, with HP Macintosh bundle, in which memory and interface are factory installed. <sup>4</sup> 4, when used with Adobe Type Manager. <sup>5</sup> 3, when used with Adobe Type Manager; 1, if PostScript graphics are required. <sup>6</sup> 3, when used with Adobe Type Manager. 1 = poor; 2 = fair; 3 = good; 4 = excellent.



# Inside a Laser Printer



A page printer produces images by fusing fine plastic toner powder to a piece of paper. First, a light source—usually a laser or a bank of light-emitting diodes—exposes the image to be printed on a photosensitive drum **(A)**. Exposed portions of the drum take on an electrical charge that attracts toner powder as the drum rotates past a hopper containing toner **(B)**. An electrically charged wire attracts toner from the drum onto the paper **(C)**. A pair of heated rollers, one on each side of the page, fuse the toner to the paper **(D)**.

thanks to its ability to switch automatically between PostScript and HP LaserJet emulation mode depending on the type of data it receives. (With other PostScript printers, you need to flick switches or send special software codes to change between PostScript and HP emulation.) In short, the PS 410 printer has it all—almost.

The printer holds only 50 sheets of paper, unless you buy the optional 250-sheet tray for \$195. And you may find the QMS-PS 410's 4-ppm engine too slow for typographically simple documents or multiple copies of the same document.

For such applications, I recommend GCC's \$2899 BLP IIs. Its controller competes poorly against the PS 410, but an 8-ppm engine gives the BLP IIs the edge on routine jobs. Okidata's \$2999 OkiLaser 840 uses an identical engine but was slower in most tests.

The BLP IIs and its 4-ppm cousin, the \$1999 BLP II, are also the only personal PostScript printers now available that provide a SCSI connec-

tor for attaching a font-storage hard drive. Indeed, if you use droves of downloadable fonts, a BLP II with a hard drive could prove faster than the PS 410, as the hard drive would eliminate font-downloading time.

For a less expensive PostScript-based machine, consider GCC's 4-ppm BLP II (\$1999), or TI's 6-ppm microLaser. Mail-order houses often discount the microLaser PS17, which contains 17 fonts, to as low as \$1700. I have seen the 35-font version for \$1995. The microLaser's swift controller (the latest models include the ATM rasterizer) and its 6-ppm engine provide balanced performance for any type of job.

As for the QuickDraw printers, it's a tougher call. The \$999 PLP II has a substantial retail price edge over the \$1299 Personal LaserWriter LS. On the street, however, prices may be closer, given that many Apple dealers offer discounts in the 20 percent ballpark. GCC has a smaller dealer network and primarily sells its products directly through mail orders. But shop

around—if your area has a GCC dealer, you may find the PLP II for less than \$999.

The Personal LaserWriter LS costs more than the PLP II, but offers more. Although the LS holds less paper (unless you buy the optional 250-sheet tray), it features a superior engine. And the printer is easier to set up, thanks to its use of a serial cable instead of the SCSI connection scheme used in the PLP II series and in Apple's Personal LaserWriter SC.

The LS's printer driver is also more smoothly integrated into the Mac environment. You can print in the background under MultiFinder, and you never have to endure the two-step printing process that the PLP driver imposes on you when memory is tight. The prototype LS tested by Macworld Lab was faster than the PLP II in text-oriented tasks, but slower when printing graphics.

Still, choosing an LS means living with limitations. You can upgrade each PLP to a PostScript-based BLP for \$999; no such upgrade will be offered



## THE POSTSCRIPT-EMULATION APPROACH

**A** PostScript-emulation program resides on a Mac's hard drive and acts as an intermediary between your programs and a non-PostScript printer. When you choose Print, the emulator saves the PostScript instructions from the LaserWriter driver on the hard drive. The emulator's interpreter then takes over, translating the file into instructions the printer can understand. A PostScript emulator's performance depends on the Mac's performance, and machines below the Mac II-class can tax your patience.

I tested TeleTypesetting's T-Script, Custom Applications' Freedom of Press, and QMS's UltraScript Plus. All three support dozens of output devices, from dot matrix printers to ink jets to lasers. All three can act as print servers for a network. You can use another Mac's Chooser to select the emulator's driver, and then print as though you were printing to a LaserWriter.

Overall, of the three products, UltraScript Plus is the easiest to use and the most reliable (see "Ranking PostScript-Emulation Software"). If you have several megabytes of memory, UltraScript Plus works transparently under MultiFinder. There is one small drawback, however: to use Type 1 fonts, you must first convert their files using an included utility.

An emulator is also a great way to put an underused ImageWriter to work for proofing. There is nothing like a real PostScript printer, but an emulator, especially UltraScript Plus, comes surprisingly close—for a lot less cash.

for the LS. And if your Mac's modem and printer ports are already occupied, you'll need to buy a serial switch box to accommodate an LS.

### Last-Place Finishers

Are there any printers you should avoid? The HP LaserJet IIP comes to mind. In February, HP announced a LaserJet IIP Macintosh bundle that includes the printer with a factory-installed AppleTalk interface, a PostScript cartridge, and an extra megabyte of memory—all for \$2195. That is considerably less than what a Mac-configured IIP used to cost, but the printer's performance still taxes my patience. Consider the GCC BLP II (\$1999) or Apple Personal LaserWriter NT (\$2599) instead. Both are faster and hold more paper, and the BLP II provides a SCSI port for a font-storage hard drive.

I would also steer clear of Pacific Data's \$695 Pacific Page P E cartridge and its cumbersome PacificTalk interface, which work with the entire HP LaserJet series. The clone interpreter in the Pacific Page P E cartridge generally provides inferior performance compared to HP's Adobe PostScript cartridge, as the bench-

marks in "Personal Printer Performance" show. Pacific Data has announced an enhanced version of the product, but it was not yet shipping at press time.

### Looking Ahead

While the original version of the Abaton LaserScript is another dud, a new version should be available when you read this. The \$1995 LaserScript LX will provide emulation-sensing features similar to those of QMS's PS 410. Abaton says the LaserScript LX will be twice as fast as its predecessor. If the claim holds up, the LaserScript LX may become the best buy among personal PostScript clones.

A few other printers were in development at press time, and they should be on the market soon. Microtek's \$2995 TrueLaser will be the first printer to combine Microsoft's PostScript-compatible TrueImage language and Apple's TrueType outline fonts. With a 6-ppm engine and a controller built around the AMD 29000—the same microprocessor that drives Apple's graphics accelerator board—TrueLaser should zip. But it will be a PostScript clone, so you will want to evaluate how well it handles

Type 1 fonts.

Another TrueImage-based printer, LaserMax Systems' LaserMax 400, is the first 400-dpi printer built around the Canon LX engine. With a retail price of \$1995, it sounds unbeatable. Still, there are catches. The printer's controller resides not within the printer, but on a NuBus expansion board that you must plug into a member of the Macintosh II family. Thus, you cannot use the LaserMax 400 with a compact Mac or an LC unless your network has a Mac II containing the printer's controller board. Unlike Microtek's TrueLaser, the LaserMax 400 doesn't contain Apple's True-

## RANKING POSTSCRIPT-EMULATION SOFTWARE

	Freedom of Press 3.0	T-Script Basic 1.3	UltraScript Mac+ 1.03
<b>SPECIFICATIONS</b>	Custom Applications	TeleType-setting	QMS
Disk space required	4MB	1.1MB	4MB
Memory required	2MB	1MB	1.5MB
Compatible with Type 1 fonts	yes <sup>1</sup>	yes <sup>1</sup>	yes <sup>2</sup>
Fonts included	35	17	43
Page preview window	no	yes	no
List price	\$495 <sup>3</sup>	\$145	\$495 <sup>4</sup>
<b>SUBJECTIVE RATINGS</b>			
Ease of installation	2	2	3
Ease of use	2	2	4
Reliability	2	3	3
Documentation	2	2	3
Overall ratings	2	2	3

<sup>1</sup> This product compatible only when used with Adobe Type Manager.

<sup>2</sup> Type 1 font files must be converted using included utility.

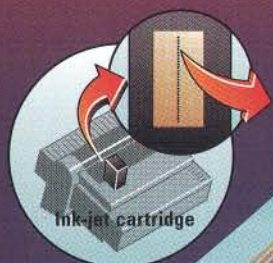
<sup>3</sup> Freedom of Press Light costs \$98, includes 17 fonts, and supports fewer printers.

<sup>4</sup> UltraScript costs \$195, includes 15 fonts, and lacks network printing.

1 = poor; 2 = fair; 3 = good; 4 = excellent.



# Inside an Ink-Jet Printer



An ink-jet printer sprays fine jets of ink from microscopic nozzles located in the disposable ink cartridge. Ink passes through a filter before it enters a reservoir that feeds the nozzles. The printer's circuitry determines which nozzles must fire ink to create the dot patterns required for text or a graphic. An electric current is applied to a heater plate located within each nozzle. The plate rapidly heats the ink, creating bubbles (A). These bubbles merge to form one large bubble (B). That large bubble expands, forcing a drop of ink from the nozzle (C). A vacuum is produced when the bubble contracts (D). The vacuum draws ink into the nozzle, refilling it (E).



Type fonts. Instead, LaserMax will include 50 of its own fonts with the printer, which the company describes as compatible with TrueType and Type 1 fonts.

New printers from Sharp Electronics Corporation and Epson are shipping now, but were not available in time to test for this article. The Sharp JX-9500PS uses the same 6-ppm engine found in TI's microLasers. With a retail price of \$3195, the JX-9500PS occupies the upper end of the personal-printer spectrum. But expect middle-of-the-pack performance from its 12MHz, 68000-based controller.

Epson, a name synonymous with dot matrix printers, has entered the laser field with a bang. Its \$3299 EPL-7500 uses a 6-ppm Minolta engine and a controller built around a lightning-fast Weitek 8200 RISC processor, which also powers Qume's swift CrystalPrint Publisher II. While the Qume machine is a PostScript clone, Epson uses an Adobe interpreter. NewGen Systems has announced but

is not yet shipping its TurboPS/400p, listed at \$2995; and its TurboPS/300p, at \$2495. The printers will offer 400-dpi and 300-dpi resolution, respectively. Resolution will be enhanced, the company says, by proprietary, ROM-based software. NewGen will also use RISC-based controllers, but will rely on a relatively slow, 4-ppm Canon engine.

The hottest new offering may be Dataproducts' \$2995 LZR-660, a 6-ppm printer that, like the EPL, employs the Weitek processor. The LZR-660 also contains Adobe's Level 2 PostScript—which, among other things, runs considerably faster than the Level 1 PostScript in use today. The LZR-660 uses the same Sharp engine as TI's microLasers, and provides a SCSI port for a font-storage hard drive.

What of the more-distant future? Prices fell dramatically in the last year. Will we see similar reductions this year, creating a new generation of personal lasers printers priced in the three-figure range? Don't bet on it.

True, GCC broke the \$1000 barrier when it cut the PLP II's price to \$999, but that marketing move was necessary to keep the printer competitive with Apple's technically superior Personal LaserWriter LS. The rumor mill suggests that Hewlett-Packard will release a less-expensive replacement for the IIP. Add memory, PostScript, and AppleTalk, though, and watch the price rise into today's range.

Page printers are just too complex for prices to fall much further—at least for the next couple of years. If you want 300 dpi for three figures, and the PLP II doesn't impress you, think ink jet. **M**

See *Where to Buy* for contact information.


.....  
Contributing editor and columnist **Jim Heid** has worked with nearly 50 laser printers since 1984. His latest book is Macworld's Complete Mac Handbook, an expanded and updated collection of his Getting Started columns, published this spring by IDG Books Worldwide.







# Working with FONTS



**M**y friends are always calling me up in the middle of the night with crises. Not relationship crises, or career crises, or midlife crises, but something far more serious: font-installation crises. Although installing Mac fonts isn't hard, it isn't as easy as, say, dragging an icon into the System Folder—yet.

If you are new to Macintosh fonts, or even if you have installed plenty of fonts but are looking for ways to save disk space, unclutter your font menu, speed up printing, or simply make installing fonts more painless, the following tips can help.

## Font Ins and Outlines

You may know the basics of Macintosh fontology by now, but in case you don't, here is a brief introduction. The characters you see on the screen are called—believe it or not—*screen fonts* (they are also known as *bitmapped fonts*). Screen fonts come packed in a suitcase icon, and you typically install them in the Mac's System file with Apple's Font/DA Mover utility.

Screen fonts are composed of bitmapped images that have been tailored to approximate the letterforms of a typeface as closely as possible on a 72-dpi screen. Although screen fonts make on-screen type look better, they are not required

for printing. As long as one screen font is available, the system will print all sizes.

For PostScript printers, each screen-font style (bold, italic, and so on) has a corresponding *printer font* (also called an *outline font*). PostScript scales a given outline to come up with characters of whatever size you request at print time. QuickDraw printers don't use

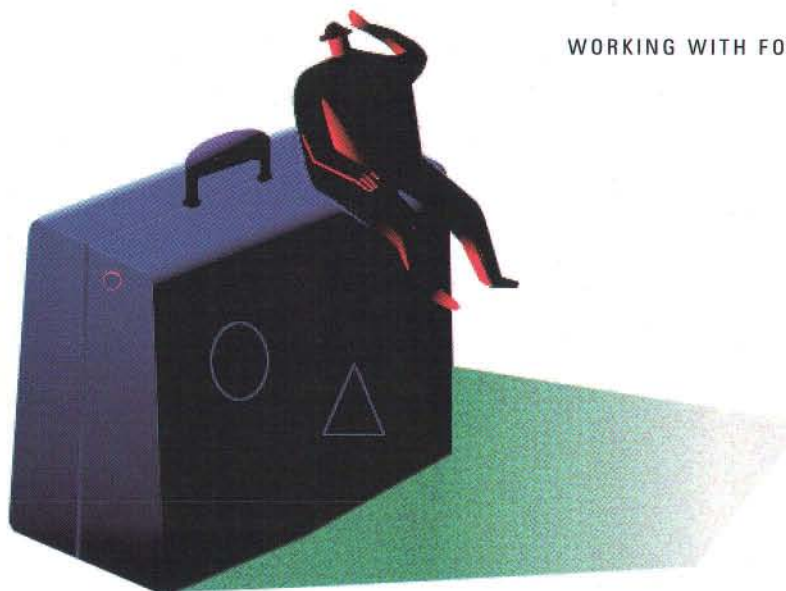
outlines, but instead scale down bitmapped fonts to make them look crisp when printed at the printer's maximum resolution—usually 300 dots per inch. Different QuickDraw printers use different scaling ratios; for example, some need a bitmapped font three times larger than the size to be printed, while others need one that's four times larger.

While PostScript printers contain a set of *resident* fonts (that is, fonts that live in the memory of the printer itself), additional fonts must be *downloaded* to the printer's memory. In most cases, applications automatically download fonts, which means the fonts you use in a document are sent to the printer with no effort on your part; once a printing job's done, the downloaded fonts are flushed from the printer's memory. To improve printing speed, you can use a utility like Adobe's Font Downloader, Apple's LaserWriter Font Utility, or Linotype's Linotype Font Utility to *manually download* one or more fonts to the printer. Unlike automatically downloaded fonts, manually downloaded fonts stay in the printer's memory until you turn off the printer. Although manually downloading fonts takes some time and effort on your part, the improvement in printing speed can be worth the trouble. For example, if you use a certain set of fonts in all your documents, you should manually download them when you start the day. The fonts will be printed as quickly as if they resided in the printer, rather than having to crawl through AppleTalk from your Mac to the printer. The number of fonts you can download at once depends on a number of factors, including the amount of memory the printer has, the application used to create the document, the complexity of the pages being

By Erfert Fenton

MICK WIGGINS





printed, and even the point size of the faces you're using. As a rule of thumb, you can download 4 to 6 fonts to an original LaserWriter, and 7 to 10 to a LaserWriter IINTX. If you consistently use a large number of downloadable fonts, you might consider placing them on a hard drive attached to your printer. Fonts downloaded in this way remain on the printer's hard drive until you remove them.

If you've ever installed fonts on a Mac, you've used Apple's Font/DA Mover, a utility that fills many people with fear and loathing. First, the good news: in the near future, many people will be freed forever from the Font/DA Mover. System 7 will do away with the need for this pesky utility and make font installation much easier (see "A New System"). And Adobe, which beat Apple to the punch on scalable screen fonts with Adobe Type Manager (ATM), has done it again with Font Porter, a simple font-installation utility included with ATM 2.0 (see "Scenario 2: ATM").

Now the bad news: not everyone will escape Font/DA Mover. System 7 will require 2MB of RAM to run, so owners of modest equipment will be stuck with Apple's old system software and utilities. Owners of Macs not equipped with System 7 can avoid the Font/DA Mover blues by purchasing ATM 2.0 or a font/DA extender (described below), but those options cost money.

I'll be presenting four basic font-installation scenarios. If you don't intend to upgrade to System 7, or do not want to spend money on extra utilities, the first scenario is for you. It's a bare-bones approach using only Font/DA Mover. The second scenario intro-

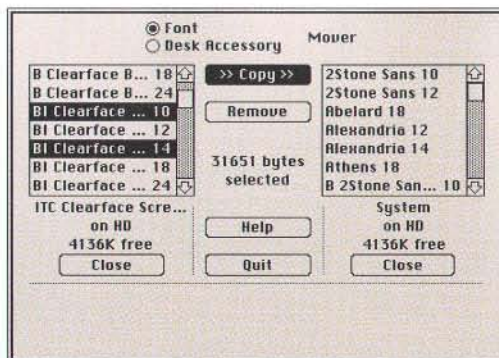
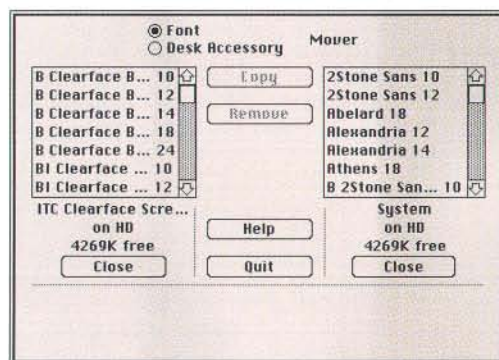
To install a new font, double-click on its icon. The Font/DA Mover window (top) will appear, listing the new fonts in the left-hand window. Locate and open the System Folder by navigating through the files and folders listed on the right. Now Shift-click on the fonts and sizes you want, and hit the Copy button. When you restart the Mac, the fonts will be installed.

duces ATM, which allows you to save space on a hard drive by installing a minimal number of screen fonts. The third scenario deals with font/DA extenders, which save time, space on the hard drive, and Font/DA Mover hassles by letting you turn screen fonts on and off without installing them in the System file. A fourth and final scenario combines the approaches described in the first three to achieve optimum convenience.

For the following exercises, we'll install a set of fonts for a hypothetical newsletter: Adobe's ITC Clearface Regular, at 12-point for the text; Clearface Bold Italic, at 10-point for figure titles and 14-point for sidebar titles; Clearface Regular Italic, at 10-point for figure captions; and Bitstream's News Gothic Bold, at 18- and 14-point for two levels of headings. The exercises assume you have a hard drive, Font/DA Mover version 3.8 (if you have an earlier version, you can get 3.8 from an Apple dealer or a Macintosh user group), and several PostScript fonts. You can follow the steps outlined here if you have a QuickDraw printer, but you have to calculate which sizes to install—unless you use ATM, which takes care of font scaling for you (see "Scenario 2: ATM").

### Scenario 1: Font/DA Mover

1. Place a copy of Font/DA Mover on your hard drive. Also copy a screen-font suitcase for each font you'll be installing (if you don't see any suitcases around, be sure you're in Icon view under the View menu). In this example you would





copy the ITC Clearface suitcase—which contains plain, italic, bold, and bold italic styles—and the News Gothic Bold suitcase (which contains only the bold style because Bitstream's font-organization scheme differs from Adobe's) onto your Mac's drive.

2. Double-click on the Clearface suitcase icon. The Font/DA Mover window appears, listing the suitcase's fonts in the left-hand column.

Click on the Open button beneath the right-hand column. A list of the files and folders on your hard drive appears. Locate the System Folder, open it, then open the System file, which is where you'll be placing the fonts. A list of the screen fonts already installed in your System file appears in the right-hand column.

3. In the left-hand column, Shift-click on the names of the font weights and sizes you need, in this case Clearface Regular 12-point, Clearface Regular Italic 10-point, and Clearface Bold Italic 10- and 14-point. When you've selected all the screen fonts you want to install, click on the Copy button. Note that the arrows (>>) on the Copy button point toward the destination of the screen fonts—in this case, the System file.

To install additional screen fonts (in this example, Bitstream's News Gothic Bold), click on the Close button below the left-hand column, then click on Open, go to the hard drive, and select the appropriate suitcase name from the list that appears. Repeat the procedure described above. When you've installed all the screen fonts you need, click on Quit.

4. Now that you've installed the required screen fonts, you can throw away your copies of the font suitcases, which just take up space on the hard drive. Installing only the sizes you need

The face is clear

The face is clear

The face is clear

The face is

The face is clear

The face is clear

The face is clear

The face is

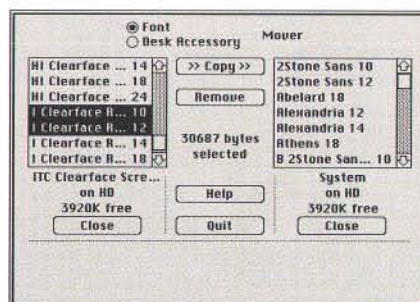
With ATM, bitmapped fonts (left) will be smoothly scaled (right) and characters that look blocky on screen at small sizes will print well.

for the newsletter conserves a considerable amount of space; the two suitcases in this example would take up a total of 818K if you installed every size and style in them; installing only the fonts you need uses just 65K.

5. Now it's time to install the corresponding printer fonts. *Install* is perhaps too intimidating a word; all you need to do is drag the printer font icon from a floppy disk for each font into the System Folder.

Leave the printer fonts loose in the System Folder; if you place printer font icons into another folder within the System Folder, the Mac won't be able to locate them when it's time to print. (Note: The utilities described in Scenario 3 let you place printer fonts in a folder, but for now just let them rattle around.)

You may notice a folder called AFM on the disk your fonts came on. AFM (Adobe Font Metrics) files contain font metrics and kerning information used by some applications, such as kerning utilities. Unless an application's manual



**Space-saver ATM** allows you to install only 10- and 12-point size Type 1 fonts, but you can display virtually any size.

## TAKE CONTROL OF YOUR FONT MENU

**M**ention the Futura family and you'll strike terror in the heart of anyone who hates yard-long font menus. Adobe's version of Futura, for example, offers 20 members, from Futura Light to Futura Extra Bold. Because of Adobe's naming strategy, the Futura family is scattered throughout a font menu under monikers like CXB Futura Co (Futura Condensed Extra Bold) and OCXB Futura C. Wouldn't it be swell if you could access all the weights you needed under the main listing, Futura? Fortunately, you have several options for doing so.

The simplest solution is to buy font families that have been merged by the

manufacturer. Many font vendors now offer merged families. When you install a merged font family, only the family name (Baskerville, for example) appears in your applications' font menus. But selecting Bold, Italic, or Bold and Italic from the Style menu summons the selected style.

Both Suitcase II and MasterJuggler include utilities that let you place styles under a single family name. For simple families that consist of plain, bold, italic, and bold italic styles, Suitcase II's Font Harmony utility merges the styles so they appear under a single family name; you access them from a program's Style menu. MasterJuggler's Font/DA Utility

takes a different approach, allowing you to rename fonts.

If a font family does not come merged, and if you do not feel like fooling around with a utility to merge it, you can take the easy way out and use Adobe's Type Reunion INIT (\$65). You just drag the Type Reunion icon into the System Folder and restart. That's all. When you open an application, the Font menu lists a single name for each font family; a style submenu pops up when you select the main font name. Another option is Eastgate Systems' Fontina (\$69.95), which fills your entire screen with columns of alphabetized font names.

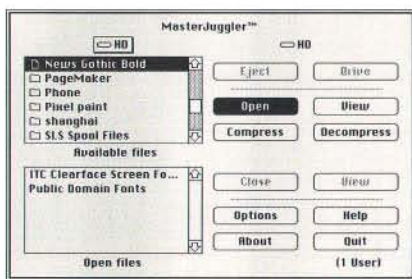


## A NEW SYSTEM

When it comes to font installation, what will the future hold? Well, one thing it won't hold is the Font/DA Mover. Apple's new system software won't require it. According to Apple's type and text product manager Jim Stoneham, installing fonts in System 7 will be incredibly simple: you'll merely drag a font icon onto the System file icon. You won't have to worry about installing screen fonts and printer fonts—one icon will do it all. And, as ATM does now, System 7 will use information in a font's outline to do on-screen scaling on the fly; you'll never have to worry about which sizes to install.

Stoneham claims that in addition to making installation easier, System 7 tools have been put in place to make font number ID conflicts a thing of the past. The potential for conflicts was already reduced when the number of available font ID numbers was changed from 256 to 32,768 some time ago. But with major players like Adobe, Bitstream, Linotype, Agfa/Compugraphic, and Monotype in the Mac font business, even 32,768 numbers are going to get used up in a hurry. Apple is encouraging developers to refer to fonts by name instead of number, which should help. Also, each TrueType font contains an inter-

nal error-detection code that's stored with any document that contains the font. It's up to developers to support this feature in their applications. Let's say you use Galliard Bold in a document and take that document to a typesetting service bureau. If you open the document there and get a checksum error, you'll know that the Galliard Bold you used is different from the one the service bureau's using. Perhaps theirs is from a different developer, or perhaps you changed some kerning information in your version. Whatever the problem, you can try and track it down before wasting money on unusable output.



MasterJuggler (top) and Suitcase can compress fonts by up to 50 percent, then automatically decompress a suitcase when you use its fonts. You can reclaim disk space by closing a seldom-used font suitcase in Suitcase (bottom) or MasterJuggler, then removing your copy of the font from the hard drive.

tells you to install AFM files, ignore them.

## Scenario 2: ATM

Using the Font/DA Mover to install all the screen font sizes you need is the cheapest way to go, since the Font/DA Mover is included with Apple's System utilities. If you use dozens of fonts, however, the approach just described will strain your hard drive capacity. By employing Adobe Type Manager (\$99), you can install only a single size of each font and let ATM scale the characters for screen display and QuickDraw printing (Adobe suggests you install two sizes per font—say, 10 and 12 points—for optimum scaling). The other benefit, of course, is that ATM improves the appearance of fonts on screen.

Because ATM scales fonts to virtually any size, you have to install fewer screen fonts to display typical sizes like 18- and 24-point, and you can invoke previously undisplayable sizes like 38- or 75-point. And ATM saves owners of QuickDraw printers such as the Apple Personal LaserWriter SC or the GCC Personal LaserPrinter the trouble of installing the correct sizes for scaling.

While the original release of ATM supported only Adobe-licensed Type 1 PostScript fonts, a subsequent release took care of that limitation, so ATM now works with other vendors' Type 1 fonts. If you have Type 3 fonts, you can use a utility such as Altsys's Metamorphosis or Image

Club's Evolution to convert them to Type 1 format. And while some users complained that ATM's on-the-fly font scaling was more like on-the-crawl, the recently released version 2.0 offers improved speed—twice as fast as the previous version, according to Adobe.

1. ATM is a cdev (Control Panel Device). To install it, you just drag the main ATM icon and the appropriate driver into the System Folder and restart the Mac (for a Mac Plus, Portable, or SE choose the driver named ~ATM 68000; otherwise choose the driver named ~ATM 68020/030). You can turn ATM on and off from the Control Panel and adjust the size of its font cache—a larger cache makes for faster scaling





but puts memory out of active service.

2. With ATM installed, use Font/DA Mover as you did in the first exercise, but this time install only the 10- and 12-point sizes for each font you wish to place in the System file (remember, for this purpose italic and bold, for example, count as separate fonts).

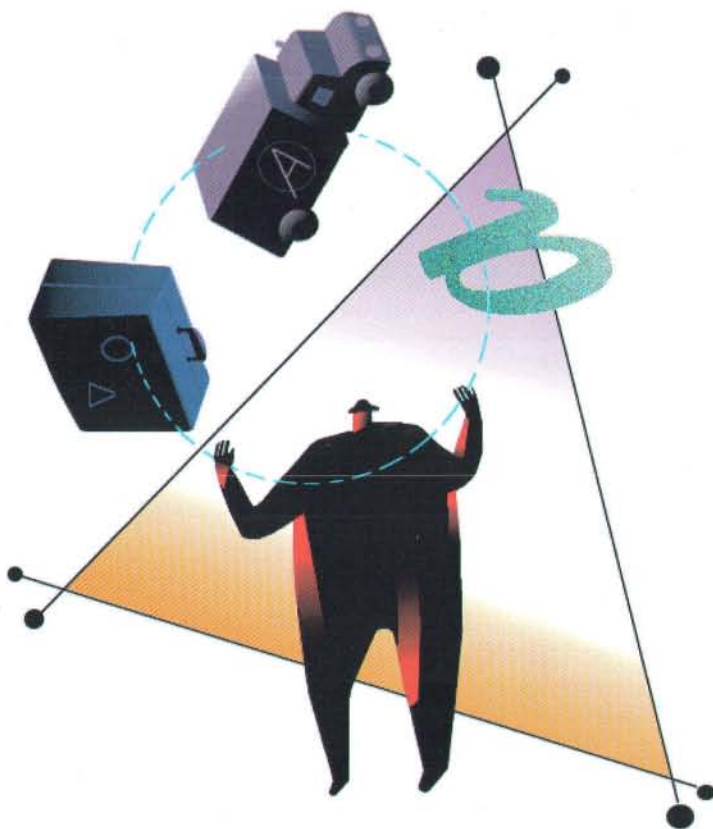
If you're not a big fan of Font/DA Mover, you're in luck. ATM 2.0 includes an INIT called Font Porter that lets you simply drag a suitcase icon into the System Folder to install screen fonts. Restart the Mac, and all the fonts in the suitcase are automatically loaded. Although this method does away with Font/DA Mover, you lose one of the bonuses of ATM—saving disk space by installing a minimal number of screen fonts.

3. For each screen font you installed, drag the associated printer font into the System Folder. ATM gets its scaling information from the printer font, so the printer font must be in the System Folder for ATM to work.

4. With ATM installed, bitmapped fonts will be smoothly scaled to virtually any size, including fractional point sizes if an application supports them. Although characters look blocky at small sizes because of the Mac's 72-dpi screen resolution, even small sizes look good when printed on a QuickDraw or PostScript printer.

### Scenario 3: Suitcase II or MasterJuggler

The easiest way to install screen fonts is with a font/DA extender like Fifth Generation Systems' Suitcase II (\$79) or ALSoft's MasterJuggler



(\$89.95). These wonderful utilities let you access dozens of suitcases full of fonts (or desk accessories) without installing them with Font/DA Mover, so you can add or remove fonts without moving them in and out of the System file.

Suitcase II and MasterJuggler are very similar, so the following instructions can be applied to either utility. Both programs include several companion utilities for viewing fonts, resolving font ID number conflicts, and managing F-keys, DAs, and sounds.

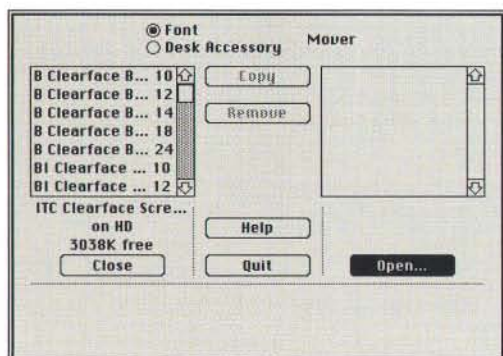
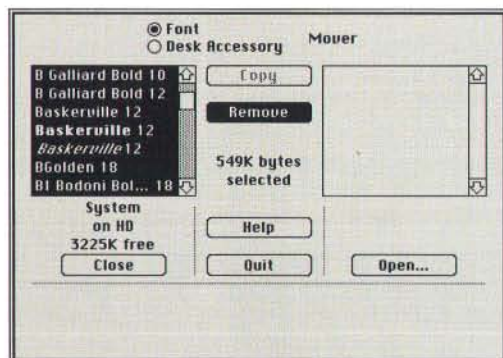
1. Suitcase II and MasterJuggler are INITs, so you simply drag the program's icon into the System Folder, restart the Mac, and the utility is up and running.

2. Copy the screen font suitcases you'll need onto your hard drive. From within Suitcase or MasterJuggler, which are accessed from the Apple menu, you can open the suitcases you want. (The two programs differ somewhat; see your manual for details.)

**Scenario 4, Step 1**  
(top): Remove most of the fonts from your System folder. Step 2: Quit Font/DA Mover and copy onto the hard drive the suitcase icons for the fonts you want. Also copy printer fonts into the System Folder. Step 3: Double-click on a suitcase to reopen Font/DA Mover. Hit the Open button (bottom) to create a custom suitcase. (continues)

Font suitcases can be large—from around 200K to more than 600K apiece. Suitcase or MasterJuggler can compress fonts by as much as 50 percent, then automatically decompress a suitcase when you use the fonts from it.

3. If you've finished a project and won't be using a particular suitcase for a while, you can close it in



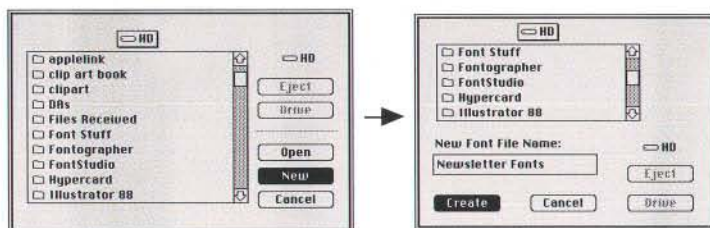


Suitcase or MasterJuggler and then remove your copy of the suitcase from your hard drive to reclaim disk space.

#### Scenario 4: The Best of All Worlds

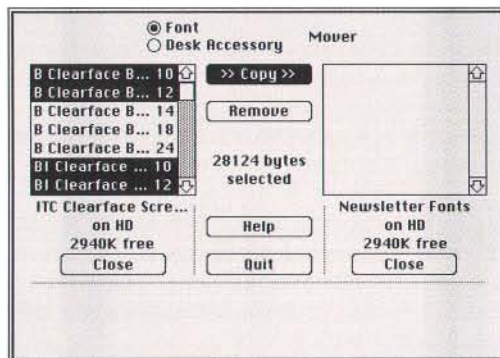
This procedure combines the capabilities of Font/DA Mover, ATM, and Suitcase II or MasterJuggler. Organizing fonts in the following way simplifies adding and removing them, saves disk space by installing the minimum number of fonts possible, and avoids font ID number conflicts.

The first step, which entails removing most of the fonts from your System file, may seem puzzling, but there's a reason for it. You perform



(Scenario 4, continued)

**Step 4:** In the dialog box that appears (above left), click on **New** and type a name (above right) for the custom suitcase. Hit the **Create** button, and a new suitcase is born and you'll be returned to Font/DA Mover's main window. **Step 5** (bottom): In the left-hand column, Shift-click on the 10- and 12-point sizes for each font you want to install. Then click on the **Copy** button to add the fonts to your new suitcase. **Quit** to return to the desktop, throw away the original suitcase icons, and install ATM and either Suitcase or MasterJuggler.



this step to prevent font ID number conflicts, those annoying glitches that occur when two fonts share the same ID number. Symptoms of font ID conflicts include installed fonts that fail to show up in a program's Font menu, or a document typed in font *x* that prints in font *y*. Fonts installed in the System file have priority over fonts in a suitcase accessed by Suitcase II or MasterJuggler. If you remove the fonts from the System file, then a font in the System can't elbow its way in front of one in a suitcase.

1. Double-click on the Font/DA Mover icon to list the fonts in your System file. Before you proceed, make sure you have the originals of all the fonts you see listed, because you're about to throw away this batch. Select the fonts you want to remove from the System—ideally, you should select all of the fonts listed (note that the Font/DA Mover won't let you throw away Chicago 12, Geneva 9 and 12, and Monaco 9; they're required for System operation).

When you've selected all the fonts you want to delete, click on the **Remove** button; a dialog box appears asking you "Are you sure you want

to remove the selected items?" Click on **OK**, and the fonts are deleted from the System file.

2. Quit Font/DA Mover. For all the fonts you'll be using, copy the suitcase icons onto the hard drive. To save yourself another round of disk insertions, copy the necessary printer fonts into the System Folder as well.

3. Double-click on one of the suitcases to open Font/DA Mover. The fonts in that suitcase will be listed in the left-hand column. To make a new font suitcase, first click the **Open** button beneath the right-hand column.

4. In the dialog box that appears, click on the **New** button.

In the window that appears, type the name you wish to give your custom suitcase. For example, you might want to make a suitcase that holds all the fonts for your monthly newsletter; type **Newsletter Fonts**, and click on the **Create** button. A new suitcase called Newsletter Fonts is created, and you're returned to the Font/DA Mover's main window.

5. In Font/DA Mover's left-hand column, Shift-click on the 10- and 12-point sizes for each style you want to install. Then, click on the **Copy** button to add the fonts to your new suitcase. Click on the **Close** button beneath the left-hand column, and open another suitcase from the list that appears. Install 10- and 12-point versions of each font you wish to add to the newsletter set.

When you've installed all the fonts you need in your Newsletter Fonts suitcase, click on the **Close** button beneath the right-hand column.

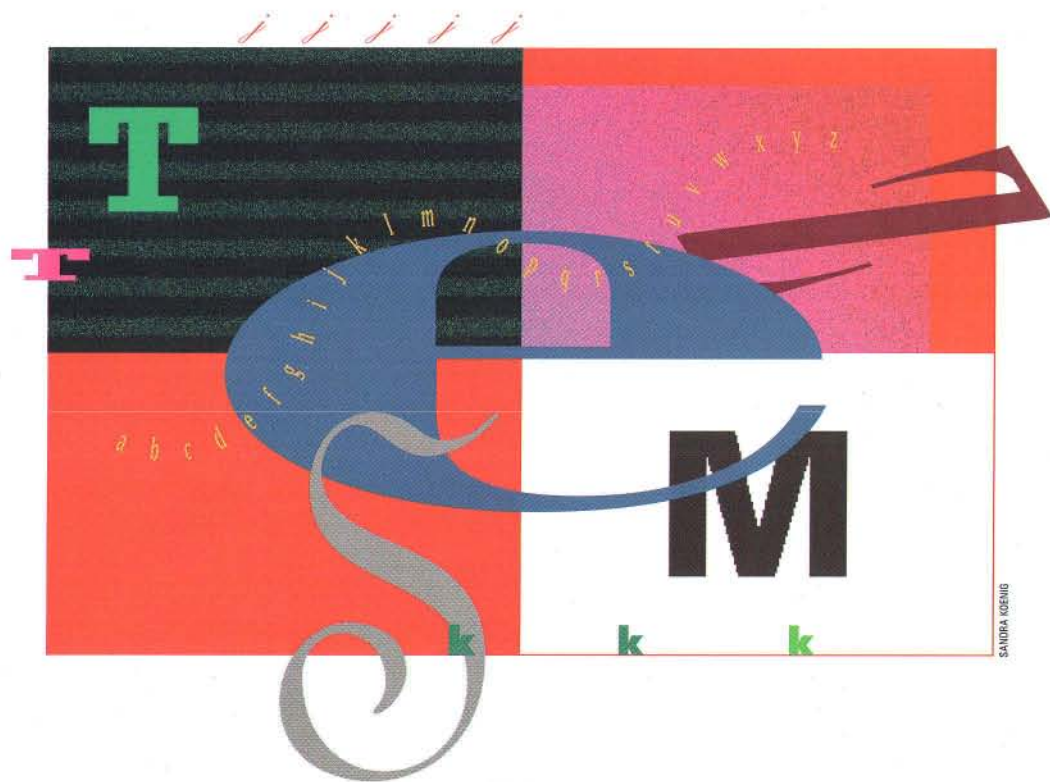
6. When you've created all the suitcases you need, click on **Quit** to return to the desktop. Throw away the original suitcase icons you used to pack your custom suitcase.

Now install ATM and either Suitcase II or MasterJuggler, as described in the previous sections, and restart the Mac. Open your custom suitcases with Suitcase II or MasterJuggler, start up a word processor or page-layout program, and you're ready to create a document. The fonts in the suitcase you selected will appear in the program's Font menu, and ATM will take care of scaling the characters.

By combining custom suitcases, a font/DA extender, and ATM, you create a flexible font-management system that uses a minimum of disk space and lets you quickly and easily switch from one set of screen fonts to another. As a final touch, you might want to tidy up your font menu by grouping styles for each font family under a single name. If so, see "Take Control of Your Font Menu." ■

.....  
**Erfert Fenton** is a Macworld contributing editor and the author of the Macintosh Font Book (Peachpit Press, 1989), which is now in its second edition.





# Setting TRAPS

## Finding solutions

You're aghast. You tweaked the colors on the screen until they were just right, and you carefully checked the film and the color proofs. Everything looked just fine. But now the pages are back from the printer and the colors are misregistered by a half-point—a full point on some sheets—and there are blatant white strips where the colors abut. Where did those white strips come from? And how can you avoid them in the future? ■ The problem is that while Mac programs create absolutely perfect knockouts when one object lies on top of another, printing presses aren't that perfect. Press misregistration is a fact of life, and without some careful attention on your part, so are those fine white lines. ■ The solution is trapping—a slight overlapping of adjacent colors that compensates for the capriciousness of the press. Color trapping is not a simple operation, but users of the top color programs on the Mac market have tools that address the problem. In this article, I outline some color-trapping techniques that you can use to make your color jobs look clean and professional.

BY STEVE ROTH



## Overprinting

The key to trapping in object-oriented illustration programs is overprinting—extending the outlines of certain objects so their colors overlap slightly. Since the objects overlap, they're much more tolerant of misregistration. You end up with an area in a slightly different color due to misregistration—much less noticeable than white.

Only Aldus FreeHand and Adobe Illustrator provide object-level overprinting. QuarkXPress provides automatic trapping, which is easier to use but cannot be controlled as precisely as manually controlled techniques. Image processing programs such as Adobe Photoshop and Letraset's ColorStudio can't use object-level overprinting to create traps (there are no objects); in these programs you must blend adjacent areas together either manually or automatically.

## Choking and Spreading

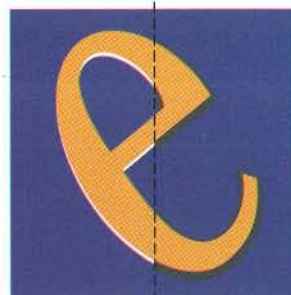
There are two basic types of traps—chokes and spreads. With a choke the surrounding area overlaps an object; with a spread the object expands to overlap the surrounding area. FreeHand's and Illustrator's tools are better for creating spreads, though with a little work you can also get them to do chokes. QuarkXPress and Photoshop create both chokes and spreads. Photoshop and ColorStudio also provide for antialiasing—blending the edges of selections into their surroundings.

Whether you're choking or spreading, you need to decide how big a trap—how wide an area of overlap—to create. This, as with so many color issues, is a decision best made in consultation with your printer. If you produce supermarket ads for your town newspaper, you need bigger traps than you do if you're creating an ad for *Vogue*. Plan on a 1/4-point misregistration with a high-quality sheet-fed press, and as much as a point with a web-fed newsprint press.

There are more sophisticated ways to set traps for specialized needs, but the following pages show the versatility of the basic trapping techniques for desktop publishing. After a little practice with these methods, you will probably never again suffer from misregistration syndrome. ■

See *Where to Buy* for contact information.

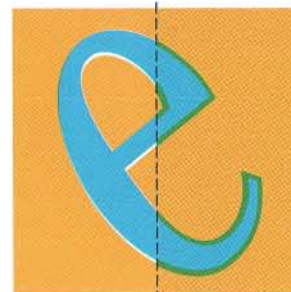
Contributing editor **Steve Roth** is co-author of *Real World PageMaker 4: Industrial Strength Techniques* (Bantam, 1990).



Spread



Choke



Spread & Choke

## Object-Oriented Trapping

One way to trap object-oriented elements is to manipulate the *stroke* of the foreground element. A stroke is a line of variable width and color that straddles the outline of an object. Normally, a stroke knocks out the color of the background, providing no trapping effect. For trapping, therefore, use an *overprinting stroke* that overlaps the background color. Designate the width and color of the stroke based on the specific trapping problem.

The left half of each figure has not been stroked, and abutting colors don't register properly (I exaggerated the misregistration and the size of the stroke for clarity). The right half of each figure shows how manipulating the stroke of an element can correct for misregistration. Because strokes in PostScript elements fall halfway outside the line and halfway inside, you usually specify a stroke that's twice as wide as the desired trap. The first figure shows a spread; the yellow of the letter



e overlaps onto the blue background. The second figure illustrates a choke; the yellow background overlaps, printing on top of the blue letter. Normally, make the lighter color encroach onto the darker for the least noticeable effect.

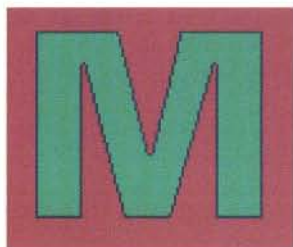
The final figure combines choking and spreading to create a composite color created from the darkest shade of cyan, of magenta, of yellow, and of black found in the background and foreground object. Use this technique to trap objects of similar brightness but of different hues. A composite color straddles the outline of the foreground object, minimizing the distortion that can be caused by a choke (which sometimes makes the foreground object look thinner) or spread (which sometimes makes the foreground object look thicker). This is particularly true with type where stroking can affect the appearance of the letterforms. Unlike a spread or choke, a composite requires a stroke that's exactly the thickness of the trap desired.



### Partial Overlaps

When part of an object overlaps a colored background, you may not want to stroke the foreground object all the way around; you may want the trap to appear only where different colors abut (left).

But how do you stroke only part of an object? You can't really, but you can get that result using what is called "clipping" in PostScript; "Mask" in Illustrator; or in FreeHand, "Paste Inside." Just clone the object to be trapped, specify no stroke on the cloned object, then clip it into the area that does not need trapping (right).



### Trapping Color Images in Photoshop

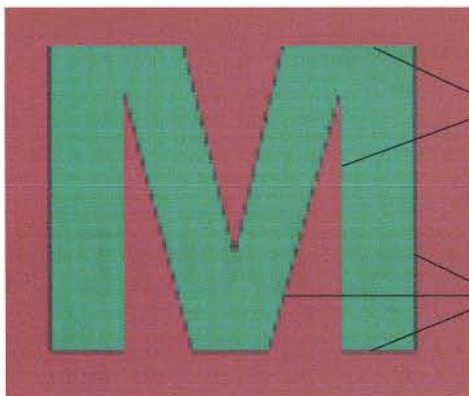
Detailed, multicolor images are among the most difficult to trap, but Photoshop makes it easy. Begin by shifting to CMYK mode; then select Trap from the Image menu, and choose the size of the trap. Photoshop handles the rest automatically. Shift back to RGB mode to see the traps that Photoshop creates (left). Use the Undo command to return to CMYK mode.

In the figure on the right, Photoshop is trapping all adjacent areas of color that are not very close in hue. Note that



Photoshop either chokes or spreads, as appropriate.

Although you can combine type, flat tints, and scanned images in Photoshop, and the program will trap all of these, Photoshop is not the ideal environment for laying out type with other graphics. And when you place a Photoshop image in a page-layout program, you still face the problem of trapping that image to adjacent objects, such as type.



HARD EDGE

BLENDED EDGE

### Antialiasing with ColorStudio

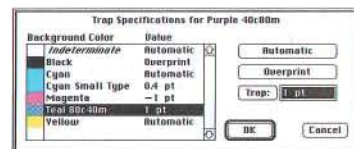
Unlike Photoshop, ColorStudio has no explicit trapping command. The trick in ColorStudio is antialiasing, which softens the edges of a bit-mapped image into the surrounding colors. But antialiasing doesn't always blend lines that are perfectly vertical or horizontal, making it an imperfect trapping method. Other techniques trap the entire outline of an object. (See *Macworld*, February 1991, "Mac Video, Take II," page 181, for a detailed discussion of antialiasing in Macintosh-generated video

production. The general principles in that article apply to all antialiasing.)

To use antialiasing with ColorStudio's Shapes annex, first create the ColorStudio image, and then use the Shapes annex to either create objects or import an encapsulated PostScript (EPS) file. Select Render to Paint Layer from the Operations submenu, and ColorStudio converts the shapes to a bitmap, antialiasing the objects in the process.

### Automatic Trapping in QuarkXPress

QuarkXPress traps automatically, based on the colors that are adjacent (for more information on trapping in QuarkXPress, see page 288 of "Insights on QuarkXPress 3.0," *Macworld*, February 1991). You can edit the trapping parameters for any color in relation to any other color. For instance, you can specify that a particular shade of purple always have a 1-point trap when it is next to a certain green.



QuarkXPress implements chokes or spreads for different color combinations; you set positive values to cause spreads, and negative values to cause chokes. You can also specify that any color overprint all other colors (useful, for example, for putting black text on a color background), or leave it all up to the automatic trapping algorithms.

While QuarkXPress's automatic trapping is convenient, it doesn't offer the object-level overprinting control available in Illustrator and FreeHand. For instance, if you have some small serif type and some display type in the same color, QuarkXPress applies the same size trap to each, which could be devastating for the small type. (You can solve that problem by defining two colors with different names and trapping setups.)

Finally, QuarkXPress doesn't trap scanned images. Therefore, if a scan is surrounded by a red box, is lying on a blue background, or has some color type on top of it, you can expect some white lines where the colors in the scan abut the colors of adjacent objects.



*Standard 13" display: 62.7 sq in screen area*

*Standard 12" display: 48.6 sq in screen area*



# New Low-Cost Macs

No wonder the Macintosh LC and IIsi are getting the attention of so many design and color publishing professionals. They're tremendous values for the money.

But what happens when you run programs like Quark XPress™, PageMaker™, Freehand™, and Illustrator™ on standard 12" and 13" displays? You can only work on a *fraction* of the image you'd be seeing on a large-screen display. (A 12" display, for example, has less than 30% of the screen area of a 21" display.)

That's where SuperMac comes in. We've got cost-effective solutions that actually turn low-cost Macs... into large-screen SuperMacs. It's true. And you can see the results for yourself on our 19" and 21" displays shown at the right.

Our low-cost 256-color Spectrum/8™ graphics cards enable the LC and IIsi to run a wide range of displays—

more displays, in fact, from more vendors than *any other* 8-bit graphic cards. So you can mix and match cards and displays to get the best results for your needs.

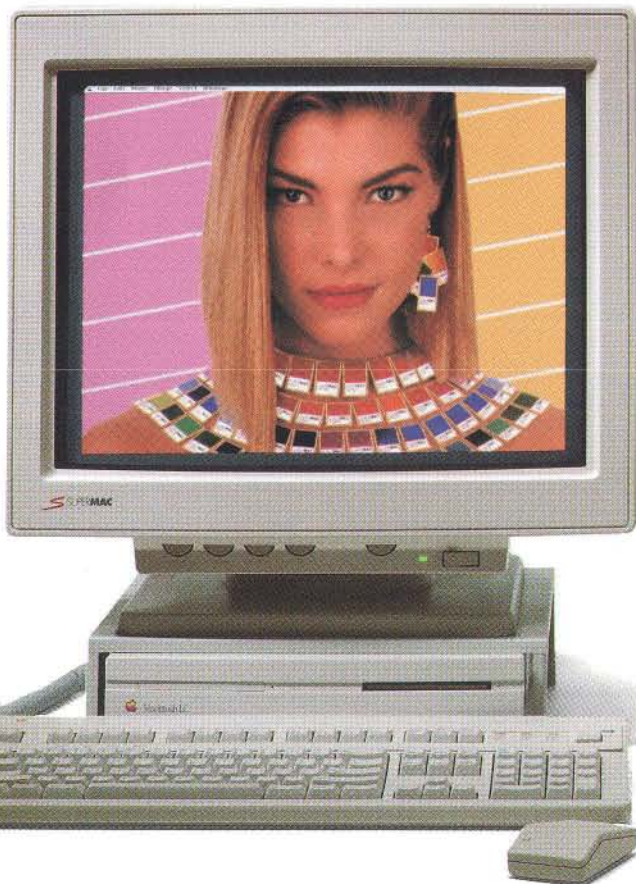
The new Spectrum/8 cards have the same comprehensive array of features as our cards for high-end Macintosh™ computers. That means your applications become large-screen creative tools, delivering one- or two-page spot-color WYSIWYG on the LC or IIsi. Plus impressive results in presentation graphics and gray scale publishing.

You're going for price/performance in color graphics with the LC and IIsi, and *so are we* with our Spectrum/8 cards. Typically, cards like these cost nearly \$2,000, but we've priced them at *less than* \$1,000. So you can combine a Spectrum/8 card with our 19" SuperMatch™ display and wind up with an *entire* high resolution



*SuperMac 19" display: 151.5 sq in screen area*

*SuperMac 21" display: 168 sq in screen area*



*SuperMatch Display Calibrator  
assures correct color fidelity every time.*

# New Low-Cost SuperMacs

system for your LC and IIsi—for less than some vendors charge for their displays alone!

**Big features for big-screen graphics.** Our Spectrum/8 LC and IIsi cards were literally designed for designers. They provide a palette of 256 colors, shades of gray, or any combination of colors and grays.

And they give you creative *freedom* with advanced features like these. Virtual Desktop™—of up to 4096 × 1536 pixels—for poster-size projects. Instant hardware pan-and-zoom for close-up views of the graphic details you want to work on. And 75Hz

flicker-free resolution to make your work a pleasure for the eyes. It's like we said: our new Spectrum/8 cards will turn your low-cost Macs...into large-screen SuperMacs.

**Seeing is believing. Visit your SuperMac dealer now.** For a look at our large-screen displays and the Spectrum/8 cards that support them on the LC and IIsi. For the location of your nearest dealer call 1-800-624-8999 (Ext. 210).



*SuperMac's family of Spectrum/8™ 256-color graphics cards includes solutions for the Macintosh LC, IIsi and Macintosh NuBus™ systems (II, IIx, IIcx, IIfx and IIfx).*

 **SUPERMAC™**  
The SuperSource for Color

**Circle 74 on reader service card**





# REVIEWS



## Color Scanner

### ES-300C

**Pros:** Comparatively inexpensive; performs single-pass 24-bit scanning; Macintosh Interface Kit includes ImageStudio, ColorStudio, and ScanDo DA; can scan via ColorStudio or DA.

**Cons:** Image area limited to 8½ by 11 inches; only seven brightness levels; no contrast control; DA exaggerates high-intensity colors; SCSI cable not included with Interface Kit.

**Company:** Epson America. **Requires:** Mac Plus; Mac II with 2MB of RAM for color; 5MB of RAM required to run ColorStudio; SCSI cable. **List price:** \$1999; Macintosh Interface Kit \$595.



Color scanners are a luxury, and until an efficient means of image compression is developed and widely accepted, professional-quality color scanning will remain reserved for those few who own monster hard drives and bazillion-megabyte data-storage systems. The fact that a typical 10,000-record database takes up less disk space than a single 8½-by-11-inch, full-color scan makes it hard for most of us to justify producing high-resolution bitmapped graphics on the Mac.

But while image processing technology lags, scanners have recently taken a step forward with Epson's introduction of the ES-300C, the least expensive—with the optional Interface Kit it's \$100 less than the closest competitor, Microtek's MSF-300Z—and, I will argue, the best 24-bit scanner available for digitizing letter-size and smaller printed images. For less than \$2000, the bargain ES-300C offers the newest flatbed scanning hardware. For \$600 more, you get two of the most highly regarded



MARK JOHANN

Epson's ES-300C Color Scanner

image-editing packages—Letraset's gray-scale ImageStudio and full-color ColorStudio. A little over a year ago, ColorStudio alone retailed for as much as the scanner.

#### Single-Pass All-Star

Other color scanners, including such favorites as the MSF-300Z and Sharp's JX 450, capture 8 bits of data in each of three passes: one pass each for red, green, and blue. In theory, this arrangement produces a satisfactory 24-bit picture, containing as many as 16 million colors. Unfortunately, reliability varies from device to device. If the three passes are not perfectly synchronized, the red, green, and blue picture components will not register properly, resulting in an image that looks like a badly printed Sunday comics page.

The ES-300C can scan a full-color image in a single pass. This is accomplished by scanning each of the three colors line for line. At line 1, the scan carriage flashes a green light, reads the result, flashes a red light, reads the

result, and flashes a blue light and reads that result; the scan carriage then proceeds to line 2. Each line is synchronized exactly because the carriage remains stationary from one color to the next.

This single-pass design is not only more accurate but also faster. A 4-by-5-inch image scanned at 200 dots per inch takes 84 seconds; that's 12 seconds faster than the MSF-300Z takes, and twice as fast as other, more expensive models (see "Color Scanners," *Macworld*, August 1990).

#### Connect and Capture

The Macintosh Interface Kit for the ES-300C includes a SCSI interface board that must be installed before connecting the scanner to a Mac. The installation process is straightforward and well documented. Unfortunately, the Interface Kit does not include a SCSI cable. An Epson representative told me that you can easily purchase a SCSI cable from a neighborhood computer dealer, but after spending the better part of an afternoon



searching through four computer stores that didn't have any in stock, I'm not sure that is the case. To avoid the hassle, make sure to order a SCSI cable (or a 50/50 cable if you want to daisy-chain) along with the scanner. (On request, Epson will throw in a SCSI cable for \$29 extra.)

The ES-300C package includes three programs for capturing and editing images: Letraset's ImageStudio and ColorStudio, and the ScanDo desk accessory from Hammerlab. The last is the most convenient and least demanding method for digitizing scanned images. It uses very little memory and provides access to most of the ES-300C's capabilities. Using the ScanDo DA, you can capture images in black and white, 4-bit and 8-bit gray scale, and 24-bit color. Images can be scaled from 50 percent to 200 percent, and a wide variety of resolution options are provided (though not in 1-dpi increments). This convenience comes at a price, however. ScanDo's color balance controls are limited, geared primarily toward changing an image as little as possible from the raw data read by the scanner. Using the CRT Display B setting recommended for gray-scale and color displays, a scan may appear washed out, lacking sufficient contrast and color saturation. As a side effect, black and other dark areas commonly appear riddled with light green and gray pixels (see "Balance of Color"). This unsatisfactory effect can be remedied using blurring and despeckling filters, such as those available in Adobe Photoshop, but at the expense of detail. (Unexpectedly, a gamma-correction setting recommended for monochrome displays—CRT Display A—provides better color contrast and saturation. Images scanned at this setting require lightening, however.)

You can also capture images using ColorStudio and the ES-300C driver. Though ColorStudio requires 5MB of available RAM to run, it produces much more satisfactory results than the ScanDo DA. The Epson ES-300C Scanner dialog box allows you to adjust resolution and scale by 1 percent increments. You can also rotate an image 90 degrees, enabling you to scan both horizontally and vertically oriented artwork. But best of

all, you can use the Exposures scroll bars to adjust the intensity of red, green, and blue light reflected off the scanned page. In addition to giving you greater control over color balance, these scroll bars enable you to increase or decrease brightness. Finally, ColorStudio offers more reliable automatic gamma correction, dramatically improving the transition from printed to electronic media.

As a front end, ColorStudio's only shortcoming is that it allows you to



**Balance of Color** Both versions of this photograph were scanned at 200 dpi. They were cropped using ColorStudio, but are otherwise unaltered. The rough image at the top was produced using the ScanDo DA. The image on the bottom was captured in ColorStudio using version 1.1 of the Epson driver. ColorStudio is less convenient (requiring 5MB of RAM to run), but it produces much more satisfactory color balance and gamma correction.

capture only black-and-white and full-color images. It offers no gray-scale options. But because ColorStudio offers a large selection of image-editing features, you can save a full-color scan as an 8-bit or 4-bit gray-scale document.

As this review was written, Epson was in the process of updating both the ScanDo DA and the Epson driver for ColorStudio.

### Best of Its Kind

If you're in the market for a top-quality, inexpensive scanner for capturing full-color photographs and artwork, the Epson ES-300C could be your best bet. It doesn't do slides, and although it can digitize transparencies mounted against a white background, the results are suitable for proofing purposes only. And regrettably, the fact that it can't scan anything larger than 8½ by 11 inches limits its potential for professional users. But if your needs are moderate, the ES-300C is a quick, sturdy, uncomplicated workhorse, capable of inputting 24-bit color scans at a reasonable price.

—Deke McClelland

See Where to Buy for contact information.



**Water and Scottish Gold** This photo was captured at 300 dpi using ColorStudio, then cropped, sharpened, balanced, and separated using Adobe Photoshop. The result is a splendid picture that rivals those produced using medium-quality traditional separation techniques.

CARLA HALE





To Save Over  
**\$1000**

Choose From Our Many Libraries  
With A Jasmine Drive Purchase

■ **Library A - "Utilities"**

**Sum II** from Symantec: The best disk utility package with disk optimization, data encrypting, backup and data recovery functions.

**Virex** from Microcom: The best virus preventer, detector and eradicator that works with all known virus today and with updates available.

**DiskDoubler** from Salient: Now DiskDoubler expands the average capacity of your disk by quickly compressing files into a form that takes less space. DiskDoubler maintains filenames, folders, icon and creation dates.

■ **Library B - "WordProcessing"**

**WriteNow** from T/maker: WriteNow the fastest. Best pure-writing program available. Has an excellent spelling checker, mail merge, graphics inclusion, footnote and header/footer control. "Wonderful interface and support RTF". *Macuser Magazine*.

**Business Letters** from Lightning Word Corp.: More than 385 persuasive business letters with interactive personalized editing and also standard legal agreements such as leases, liens and many others.

**Sales Letters** from Lightning Word: More than 259 professionally written letters to help boost your sales.

Libraries may change without notice.

**InstantResume** from Lightning Word: The interactive prompting system automatically personalizes the resume that you chose and drop it in your wordprocessor, giving you many forms of resumes and job-winning letters to choose from.

■ **Library C - "Business Booster"**

**C.A.T. III** from Chang Labs: If your success depends on the number of contacts you make and your ability to track, cultivate or service them, this powerful new software is the one you have been waiting for. Its integrated word processing, drawing and label printing will save you hours.

**Business Letters** from Lightning Word: See **Library B**.

**Sales Letters** from Lightning Word: See **Library B**.

■ **Library D - "Accounting"**

**Rags to Riches Accounting** from Chang Labs: The perfect accounting package to start a business with General Ledger, Receivables, Payables, Inventory and ProBilling with a great user interface and a fast start setup.

**Business Letters** from Lightning Word: See **Library B**.

**Sales Letters** from Lightning Word: See **Library B**.







### ■ Portable

Portable's sleek design, reliability and low cost is for the user who knows what value is.

**Portable 40MB to 120MB  
from \$299**

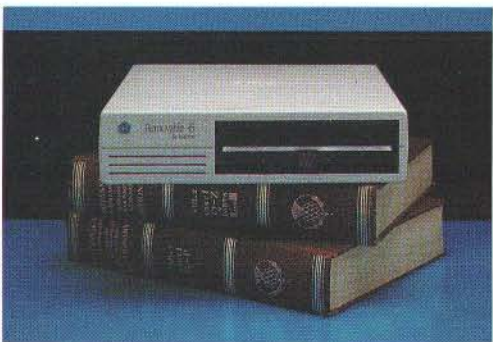
**BackPac 40MB to 80MB  
from \$369**



### ■ Traditional "Direct Drive"

Offers all the premium features such as two surge protected AC outlets, a noiseless fan, a SCSI select switch and others too numerous to mention. Select the drive other hard disk manufacturers copy.

**Direct Drive 40MB to 200MB  
from \$369**



### ■ Removable

Add another cartridge when you need more storage, and because our DriveWare software locates and locks out all bad sectors, you don't lose important data.

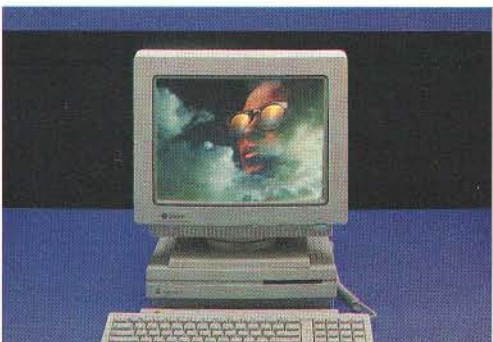
**The Jasmine 45 Removable  
(SyQuest) \$549**



### ■ The Clipper

The world's smallest hard drive measuring 3" by 1" by 5", weighing less than 10 ounces and able to withstand a shock over 100G's. It has been designed to be directly carried from one Mac to another in a shirt pocket or briefcase. The drive plugs in directly behind the Mac.

**The Clipper from \$399**



### ■ ColorVue

14" High Resolution Color Monitor for the price of Black and White. A Resolution of 640x480, offering a palette of over 256 simultaneous colors. ColorVue comes with a non glare screen and tilt swivel base.

**ColorVue \$399**

# Jasmine's Family of Products



### ■ Memory

**1Meg Simms \$49.95**



**Jasmine**  
Now a Division of Chess

To Order With Your  
Visa or MasterCard in the USA, Call:  
**1-800-347-3228**

Jasmine Europe Parc Club - 32 Jean Rostand  
91403 Orsay Cedex France  
Tel: 33 1 60 19 25 05 Fax: 33 1 60 19 10 32

Prices may change without notice. ©1990 Jasmine Technologies, Inc. 1225 Elko Drive, Sunnyvale, California 94089.  
Featured products and pricing are valid in the 50 United States. For international inquiries call (408) 752-2900 or fax (408) 752-2916.  
Jasmine, DirectDrive and DriveWare are registered trademarks of Jasmine Technologies. All other trademarks are of their respective manufacturers.

**Circle 126 on reader service card**

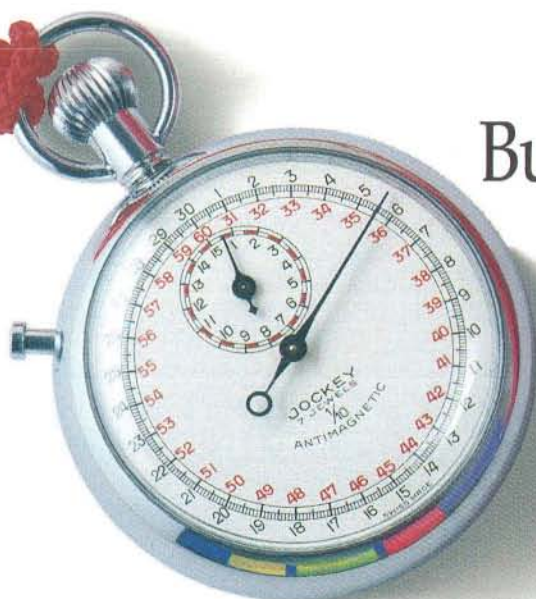






# PostScript solutions for LaserJet printers haven't exactly set records for speed.

## But times have changed.



In the past, patience has been a necessity for getting PostScript® quality graphics and text on a LaserJet IIP, III, or IIID.

Introducing PacificPage XL™ for Macintosh – it will change the way you look at PostScript emulation products, both in price and performance.

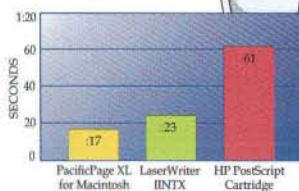
Compare it to the Hewlett-Packard PostScript solution. For their cartridge, 2 MB of printer memory, and an AppleTalk interface module, you'd spend \$1360. PacificPage XL for Macintosh costs only \$1199 and provides the newest version of the PacificPage P•E cartridge, our PacificTalk interface module, and a high speed accelerator board that installs into the printer's memory slot. Included on the accelerator board is an Intel i960™ KB RISC microprocessor and 2 MB of memory which

produces output 2 to 8 times faster than the HP solution.

PacificPage XL for Macintosh supports Adobe Type 1 and 3 outline fonts and utilizes the Resolution Enhancement feature of the LaserJet III printer family for sharp 300 dpi output. And, PacificPage and

PacificPage XL for Macintosh comes with a lifetime warranty and a money back guarantee of satisfaction.

If you're looking for a change of pace in PostScript solutions for the HP LaserJet printer, call your nearest dealer or contact Pacific Data Products, 9125 Rehco Road, San Diego, CA 92121, U.S.A., (619) 597-4651, Fax (619) 552-0889.



**PACIFIC**  
DATA PRODUCTS

All prices are U.S. list effective 2/15/91. Time comparisons shown above reflect downloading of files to start of printer engine. PostScript cartridge products were used with the HP LaserJet III, and all times were measured on the Macintosh IIfx over AppleTalk. PacificPage XL, PacificPage P•E and PacificTalk are trademarks of Pacific Data Products, Inc. Macintosh and AppleTalk are registered trademarks of Apple Computer, Inc. i960 is a trademark of Intel Corporation. PhoenixPage is a registered trademark of Phoenix Technologies Ltd. Copyright 1987, 1988 Phoenix Technologies Ltd. HP, LaserJet and Resolution Enhancement are registered trademarks of Hewlett-Packard Co. PostScript, Adobe, and Type 1 and 3 are registered trademarks of Adobe Systems Inc. EUROPEAN SALES OFFICES: The Netherlands Tel (31) 20-475566, Fax (31) 20-453329 France Tel (33) 1-42669075, Fax (33) 1-42661560 England Tel (44) 442-231414, Fax (44) 442-236540 Switzerland Tel (41) 22-412650, Fax (41) 22-410682. © 1991 Pacific Data Products, Inc.





own a CD ROM drive, Grolier Encyclopedia might be reason enough to buy one.

### The Random House Encyclopedia, Electronic Version

If you can't afford a CD ROM drive but need an encyclopedia, consider the Random House Electronic Encyclopedia. This seven-disk package from Microlytics is a text-only version of the popular one-volume *Random House Encyclopedia* and costs about one-fourth as much as the Grolier product. After installation, the complete encyclopedia and retrieval software take a little more than 5MB of space on a hard drive.

You access the Random House Encyclopedia via the same Infodesk desk accessory that's used for Microlytics' other research products, Inside Information and The Elements of Style. This DA enables you to locate, via the Reverse Dictionary, all articles containing a typed word.

The software also includes hierarchical categorization of every topic in the encyclopedia, so you can double-click on ever-narrowing category names until you reach the article of your choice. This organizational scheme is sometimes useful and sometimes entertaining—should Cannibalism be a subcategory of Food and Drink, Consumables (see "Narrowing the Search")? Finally, a Time Line view shows you major events in a category in chronological order.

The necessary brevity of each of the 20,000-plus articles is likely to frustrate anyone who's used to working with a large encyclopedia; one-paragraph articles are the norm, and most leave you needing more information. The Random House Encyclopedia is more like a large, quick-access dictionary than an encyclopedia.

### Bits or Pages?

Neither of these products is likely to completely replace traditional paper reference books. Because they lack the drawings, charts, and maps found in their paper counterparts, these electronic encyclopedias can't be thought of as complete reference works. But what they lack in graphics, they make up for in information accessibility. Searching for subjects,

browsing through related articles, extracting quotes—these are the kinds of tasks that will seem hopelessly cumbersome with traditional reference books once you've used either of these digital encyclopedias.

—George and Susan Beekman

See Where to Buy for contact information.

## ★ Publication Management Software

### PAGE DIRECTOR 1.0

**Pros:** Excellent management and reporting tools; good color handling; comprehensive, understandable manuals.

**Cons:** Doesn't pass Microsoft Word styles through to QuarkXPress; copy-depth measurements somewhat inaccurate; positioning limited to full-point accuracy.

**Company:** Managing Editor Software. **Requires:** Macintosh Plus; 1MB of RAM; hard drive; System 6.0.

Recommended: 2MB of RAM; Mac IIsi. **List price:** \$895.



Even with all the great programs out there for desktop publishing on the Mac, to date we haven't had much in the way of tools for managing and organizing the dozens, hundreds, even thousands of page elements that make up a complex publication like a magazine or newspaper. Managing Editor Software's new program, Page Director, addresses that need admirably.

Using Page Director is a two-step process. First you build a dummy publication using your text and graphics files. Then you use a QuarkXTension to open that Page Director file; the XTension builds the whole QuarkXPress publication for you, based on the dummy you created in Page Director. The XPress publication needs quite a bit of fine tuning, but the bulk of the management, placement, and copy fitting is all done in Page Director before you even get near XPress.

### Dummying Pages

You start in the Page Director application by defining page dimensions, margins, number of columns, and gutter width (these measurements, and all others, are limited to full-point accuracy; you can refine these later

in QuarkXPress). Then you use the Gather command to read and measure the text and graphic files that will make up the publication. You can even have the program gather elements automatically, by looking in certain folders for files with certain types and creators. If you're building Thursday's sports section, for example, you might tell it to look for all the Microsoft Word files in the Thursday Sports folder on the network hard drive.

Once you've gathered the publication elements you want (yes, you can just go out and get one or a couple of files if you want to), the names and sizes of those elements appear in Page Director's Items list (see "A Couple of Items"). From there you can drag the elements directly onto pages or change their attributes in the Edit Items spreadsheet window.

### Text with Style

Of course, Page Director has to know how the copy is formatted in order to accurately measure copy depth (the amount of space the text will occupy on a page). (Note that Page Director styles apply to complete elements, so that within a story you can't style subheads differently from body copy.) Unfortunately—and this is probably Page Director's biggest failing—the program doesn't pass Microsoft Word styles through to QuarkXPress; instead it converts the Microsoft style formatting to hard, local formatting in XPress.

Page Director's hyphenation and justification routines are very different from those in QuarkXPress, so the copy depth as measured by Page Director can be quite different from what ends up in the QuarkXPress publication. This is especially true if you use Page Director's styles rather than the file's native formatting.

You can't see the imported words and pictures in Page Director, or in printouts of the layout; you see only representations of the graphic and text areas. However, you can write headlines, captions, jump lines (such as *continued* and *from page x*), and other short pieces of text such as pull quotes right in the program, and those are readable.

(continues)



# The only other name you need to know.

Ask About Our  
CLASSIC KIT  
SPECIAL!

## Microtech International.

Along with Apple, we've listened to your demands for new products. That's why we continue to develop products that keep pace with the latest technology, including the new Macintosh Classic, LC and IIsi. For these new computers, we have developed upgrade solutions that allow dozens of economical memory and storage options with strict adherence to Apple specifications.

## Quality upgrades with more value.

Upgrade your new Mac with Microtech products that fit *your* needs. Add muscle with a new, high speed Europa™ internal Classic drive of 20, 50, or 100MB, or a Europa external drive of 20, 40, 80 or 100MB. The Europa Series is the perfect upgrade solution — built for economy without sacrificing quality.

Pump up the performance of your Mac with one of our new Io™ memory boards. Our 1MB board offers the flexibility of SIMM expansion. And if System 7.0 is in your future, our unique 3MB solution is a must.

For the convenience and portability of removable media, our R50, utilizing the reliable Ricoh mechanism, offers speed, flexibility and unlimited storage capacity.

## The Microtech name means quality.

For over 5 years, Microtech International has been setting the precedence in quality, service and support. Because we know what quality means to you — a product you can depend on, service you can rely on. Microtech products are backed by the longest warranties in the industry, and our service and support team, accessible toll-free, are winners of Macworld Magazine Service Hero Awards. Microtech also has an outstanding record for repairs in 48 hours or less, and our MicroLink BBS is available 24 hours a day.

So for quality, value, service and support in new Macintosh products, there really is only one other name you need to know... Microtech International.

**1-800-325-1895**

International inquiries call: 203-468-6223 (FAX 203-467-8124)



**MICROTECH**  
INTERNATIONAL, INC.

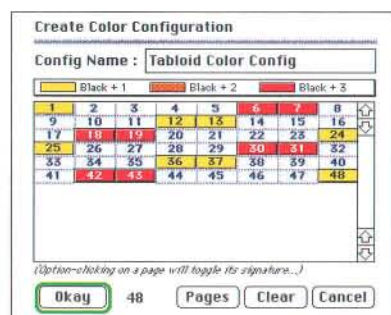


## Color Imposition

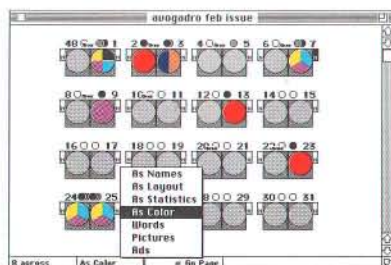
One of Page Director's more impressive features is the ability to set up color signatures, designating which pages in a 32-page signature will print with the four process colors, for example, or which will have spot color. The program comes with several color configurations common on web presses, but because of the variations in signature imposition, it also provides a Color Configuration Editor that lets you set up your own signature color placements based on what your printer has available (see "The Color of Pages"). You can see the color configuration easily by choosing to



**A Couple of Items** Page Director's Items List Report provides a fast look at all the elements in a publication—their sizes, types, and attributes. You can use this list to sort and select among the items, and even act on them (place, position, or apply color) without ever looking at the layout.



**The Color of Pages** Page Director's Color Configuration Editor lets you build color configurations by clicking on a page number and specifying how many colors will print on that page.



**Show as Color** You can view Page Director's layouts in several ways. The As Color option lets you see at a glance which colors are going to print on various pages in the signature.

show the As Color layout option (see "Show as Color").

If you try to place a process-color element on a page that isn't set up to print process colors, Page Director asks if you want to change your mind, change the color of the element, or change the color imposition to one that allows color on that page—pretty smart. It's not smart enough to detect spot and process colors within an EPS file, however, so you can place a color EPS on a black-and-white page without Page Director's warning you.

## Reporting for Duty

In addition to nice on-screen representation of the nascent publication, Page Director provides excellent reports on the status of the publication and its elements. There's a Production Report that lists all the elements on each page with their combined advertising, editorial, and graphic column depths (the amount of column space the graphics will require). The Editorial Report is similar but provides more detail. The Color Report lists the colors available and used on each page. And the Item Files Report lists the source files, their sizes, types, and dates. You can even save a list of items and read it in to a spreadsheet or database, if you currently use one of those systems for tracking elements.

Page Director's manuals—a reference manual and a user's guide—are impressive for their personable writing, almost like one professional talking to another. They do assume some knowledge of publishing (especially newspaper publishing) techniques and terminology, however.

Page Director's inability to import Microsoft styles is a major liability. But even if you never take the final step of building your publication automatically with the Page Director XTension, Page Director is a great management and planning tool. The program lets you look at publications in ways that you never could before—as a list of elements, a set of colors, a batch of ads. Even though it's not currently set up to let multiple users access the same file, it's an impressive solution to a problem that we've been struggling with for years—since the days of clay tablets.—**Steve Roth**

See Where to Buy for contact information.

## Security Software

### A.M.E. 1.1

**Pros:** Can control access to folders and files, serial ports, desk accessories, and disk initialization; maintains comprehensive activities log; can set up user hierarchy and privileges. **Cons:** Can't set limit of failed log-on attempts; conflicts with Timbuktu/Remote; hard drives cannot be reformatted or recovered with normal utilities; does not restrict access to individual printers, only to types of printers. **Company:** Casady & Greene. **Requires:** Mac Plus. **List price:** single user \$279; 5-Mac pack \$895; 10-Mac pack \$1495.



If you've been looking for the software equivalent of a bank vault for your Macintosh, then look no further. Casady & Greene's A.M.E. (Access Managed Environment) promises to protect your Mac from unauthorized use in ways you've probably never thought of. A.M.E.'s security options make it an ideal program for Macs that are used by more than one person, such as a Mac located in a workroom.

## Which Level, Please?

A.M.E.'s security is set up on a tiered structure. At the top is the administrator, who controls everything by setting the security options for other users. Users are assigned a security level below that of the administrator. Those who are assigned a user-management security level, for example, can define access privileges for users at a lower security level.

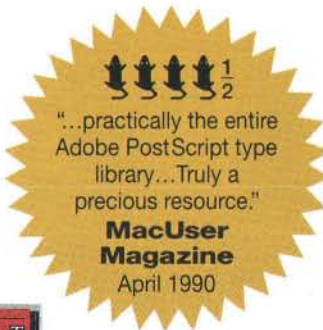
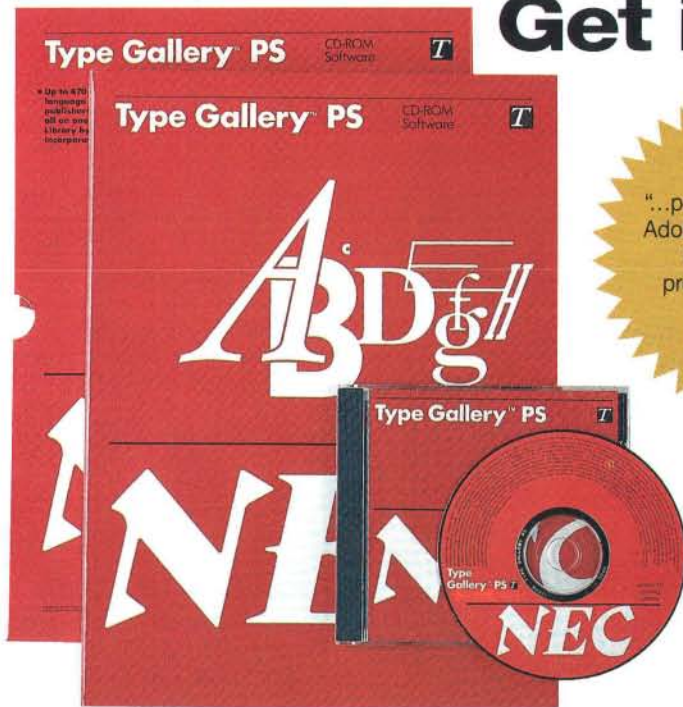
This security approach could be used for a Mac that is shared by a number of people from different departments. The administrator could give the department heads user-management privileges. The department heads could then set the access privileges of their workers.

## Let Me Count the Ways

At the most basic level, A.M.E. requires that each user log on to use the Mac. This requires entering the user's name and a password. The user is also expected to log off when finished. If (continues)



# Why Pay More for Adobe Type on CD-ROM When You Can Get it for Free?



NEC's Type Gallery PS CD-ROM software

**Choose the best CD-ROM Adobe type solution—get authentic Adobe® type and a CD-ROM reader for the lowest combined cost from NEC.**

Why pay more for Adobe type on CD-ROM? Come to think of it, why pay anything? Choose the CD-ROM Adobe type solution that gives you your **first three typeface families free**, as well as the lowest combined CD-ROM reader/type library cost – and other important advantages.



NEC's unique Intersect CDR-36 CD-ROM reader

## Compare NEC's Type Gallery PS to Adobe Type on Call

	TYPE GALLERY PS	ADOBE TYPE ON CALL
• Authentic Adobe type	Yes	Yes
• Initial unlocking	Any 3 volumes, free	Choose 2 of 8 preselected, pay \$49-\$99
• Future unlocking	Save 48%	Save 30%
• Total typefaces on disc	950	950
• Includes CD-ROM reader	Yes	No
• Documentation	250 page type catalog	User Manual
• Technical support	One source, reader and software	Two separate sources
• Total cost	\$499*	Up to \$700**

\*Manufacturer's suggested retail price based on this special bundle offer available only from selected dealers listed here through June 30, 1991.  
\*\*Based on average retail price of Adobe Type on Call and currently available CD-ROM readers.

## Now that you know the facts, you'd choose NEC's Type Gallery PS

Wouldn't you? Now you can buy the best Adobe type solution on CD-ROM for only \$499! You'll get NEC's Type Gallery PS Locked Version and the unique NEC Intersect CDR-36 CD-ROM reader. You can choose any three typeface families (up to a maximum of 15 individual typefaces) from nearly 1000 Adobe typefaces on the disc. Plus, you'll save an average of 48% vs. Adobe's diskette-based SRP when you call NEC to unlock additional families.

## Type Gallery PS from NEC – it's the best way to buy Adobe Type on CD-ROM.

Contact one of the authorized NEC CD-ROM dealers listed here to order your Type Gallery PS/CDR-36 bundle. Or call NEC Technologies at 1-800-NEC-INFO for product literature.

**Educorp**  
**1-800-843-9497**

**Mac Warehouse™**  
**1-800-255-6227**

**Mac Zone**  
**1-800-258-0882**

**Tiger Software**  
**1-800-888-4437**

Offer valid for purchases made before June 30, 1991 only through dealers listed here.

# NEC

Adobe and PostScript are registered trademarks of Adobe Systems, Inc., Type Gallery and Intersect are trademarks of NEC Technologies, Inc. Reprinted from MacUser, April 1990  
©1990 Ziff Communications Company



users are accustomed to simply walking away from the Mac after use, the A.M.E. administrator for that Mac can set A.M.E. to log off a user after a specified amount of idle time.

Unauthorized users attempting to guess a password can get increasingly frustrated with A.M.E., hopefully so much so that they give up and walk away. A.M.E. increases the waiting period between log-on attempts by a multiplier that's set by the administrator. Thus the first failed attempt might incur a wait of only 30 seconds, but the fifth or sixth try might mean waiting hours. The only thing I don't like about this approach is that you cannot set a limit to the number of failed attempts.

Once you're logged on, A.M.E.'s security extends to the use of folders, files, desk accessories, printer drivers, the serial ports, inserting and initializing disks, and using and copying applications. For each of these options, the administrator can set different privileges for each user (see "Pick and Choose").

Printer drivers are a different matter. An administrator can select which printer driver, such as for any LaserWriter or AppleTalk ImageWriter, can be used, but cannot restrict access to individual printers.

### Big Brother Is Watching

Not only does A.M.E. control access to almost every aspect of a Mac, but it also can log the actions of each user. For example, A.M.E. can monitor individuals logging on and off, and their

printer use, DA access, serial port use, disk insertions, program launching, and opening files, among other things. The log can record successful actions and failed ones.

Obviously the activities log will get large quickly if you monitor everything. You can, however, set a maximum size. When the log approaches that limit, A.M.E. removes the oldest entries.

While most of A.M.E.'s interface is straightforward and easy to follow, its use of a picture to show the proportion of the log you've selected to review or delete is confusing. The picture uses two sliders—one to show the first entry selected, the other for the last entry selected. Unfortunately, A.M.E. does not display either a percentage or a file size (in kilobytes or characters) to indicate how much of the log you've selected. I'd like to see this option included.

### Program Conflicts

A.M.E. offers so much security it conflicts with some programs and hardware. For example, A.M.E. should not be used with Adobe Separator 2.0, DiskExpress II, INITPicker, Moire, SuperClock 3.7 and 3.8, SuperPaint 1.1, or TOPS 2.0. You cannot use A.M.E. with Bernoulli drives from Iomega.

A.M.E. cannot be used with some disk driver utilities. For example, you cannot update disk driver software while running A.M.E. You must remove A.M.E., update the driver, and then reinstall A.M.E.

A.M.E. and Timbuktu/Remote are not compatible. If you use A.M.E. to assign read privileges to a certain folder, and a Timbuktu/Remote user tries to access that folder, the remote user crashes, and the host (which is running A.M.E.) issues a warning about improper privileges and then hangs up.

### Keeping the Lid On

A.M.E. is a comprehensive program for securing access to a shared Mac. The ability to control access to files, serial ports, and printers makes it a strong security program that I recommend, even if some of its fine points need polish.—**Dave Kosiur**

See Where to Buy for contact information.

## Data and Send-Only Fax Modem

### DATALINK/MAC

**Pros:** Easy-to-use cover-page feature; flawless operation as a data modem; on-board speaker; useful fax print options; MNP Class 5 available.

**Cons:** Lacks a usable page-preview function; phone book entries listed by contact name only and not alphabetized; relatively high failure rate during fax transmissions. **Company:** Applied Engineering. **Requires:** Mac II with free NuBus board slot. Recommended: Hard drive. **List price:** For data communications only \$299; with MNP Class 5 option installed \$349; with send-fax and MNP Class 5 \$399. Send-fax and MNP Class 5 options each \$79.



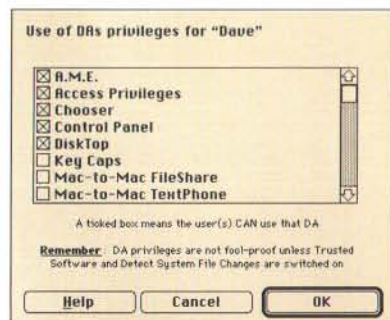
If you have a Mac II and have been wondering when the NuBus fax modems will finally be available, well, the wait is over. One of the first such units to be released is the DataLink/Mac, a combination 9600-bps send-only fax and 2400-bps data modem. As with other NuBus boards, installation is simple. All you do is slip the board into a free slot and connect it to a telephone wall outlet with the supplied RJ-11 cable. You can also connect a phone to the unit's second jack.

Because many telecommunications programs don't support NuBus serial ports, Applied Engineering provides a combination INIT and cdev that makes the Mac treat the DataLink/Mac as though it were the Mac's internal modem or printer port. The board also contains its own serial port, which will be accessible as a third serial port once Apple's Communication Toolbox software is released.

### AE Fax Software

Like other fax modems, the DataLink/Mac comes with software for monitoring fax transmissions, viewing faxes, and maintaining a fax phone book. The cover-page feature is simple, but it does the job of enabling you to create as many different covers as you like.

Fax phone book entries have spaces for a name, a company, and a (continues)



**Pick and Choose** This window displays the list of installed DAs (in the System file or using Suite-case II or Font/DA Juggler). Clicking the box before a DA allows a user to use it. Unclicked DAs remain visible to the user, but the user will receive a message from A.M.E. that that particular DA cannot be used.



# Along MacAvenue, Every Sign Points to Quality

As a Macintosh user, you've already made a clear commitment to quality. At MacAvenue, we help you build on that commitment by designing the same high quality into our products and services. From our Protégé drives to our technical support, quality is the first consideration in every hardware and software product we sell.

## No Guesswork

This means we take the guesswork out of choosing the right software and peripherals. Our engineers carefully evaluate every product to make sure it performs to exacting standards.



## Call Us Free — Get It Tomorrow

MacAvenue gives you toll-free ordering and the best deal anywhere in overnight shipping. When you've decided on a software package or a system enhancement, call our 800 order line (800-926-6221) and you'll get prompt

and knowledgeable attention. And for only \$2, your order will be shipped to you for next day delivery by Federal Express\*.

## Top-Notch Tech Support

MacAvenue is committed to providing the best after-the-sale support possible. If you ever have a question about hardware or software purchased from MacAvenue, just call our toll-free technical support line (800-766-6221). If your question is about a particular application, our technicians can almost always bring up the same program on their Macs and have you running smoothly again in a few minutes. If it turns out that we need to replace any of the products we offer, we'll Fed Ex a replacement and pick up the problem item. That means no shipping cost for you.



## Guaranteed Satisfaction

We back our products with the best guarantees and warranties in the business. Every hardware product is covered by a 30-day, no-questions-asked, money-back guarantee. Protégé monitors and drives have 1-year (2-year for Quantum drives) limited warranties.

We want to make sure you get what you want at the most competitive price — and that your satisfaction lasts long after delivery! So call us now!!!

\* Purchases under \$50 will be shipped UPS 2-day, still only \$2.

Call Today! **800-926-6221**

Key Code  
871

**MacAvenue™**

A Division of CompuAdd Corporation



# Choose MacAvenue's Protegé Line for a Great Picture or a Smooth Drive.

## MACAVENUE ANNOUNCES THE END OF THE SCROLL BAR

Constant scrolling takes the creative joy out of graphic design — not to mention driving you crazy. And waiting for the screen to refresh can chase off the most ardent Muse. MacAvenue rescues you from the creative doldrums with a larger and sharper image of your whole design. No scrolling.

Our Protegé Display systems are value leaders in large-format Macintosh displays. Sharp screen images, flicker-free refresh rates and convenient ergonomic features such as a tilt/swivel base mean Protegé Displays are comparable to Apple and Radius products that can cost twice as much.



The 15-inch, ultra-high resolution screen of the Protegé Full-page Display features a complete 8 1/2" x 11" page with no reduction of image size or quality. Complete with video card, it's only \$495. Or get a 2-page view with the 20" Protegé Dual-page Display for a mere \$895. Just to make sure you get full enjoyment from your Protegé Display, we bundle Now Utilities and the After Dark screen saver — **FREE!**

For a second opinion, ask **Bob LeVitus**, author of *Dr. Macintosh*, who says, "I love the crisp, bright image I get with a Protegé Display. And with the 30-day, no-questions-asked money-back guarantee, you just can't go wrong. I highly recommend the Protegé Display." Sure, other companies offer large monitors. But MacAvenue's prices let you actually take one home.



## PROTEGE — THE BEST HARD DRIVE IN THE BUSINESS

How can we look you straight in the face and tell you we have the best hard drive on the market? Everyone knows that the heart of any hard drive system is the drive mechanism — and it's usually the same, no matter whose name is on the product.

### So what makes the Protegé drive different?

It's not just another pretty case. The Protegé's metal interior and plastic exterior — just like the Mac's — allows us to control air flow and buffer the drive noise. When you work with the Protegé, all you hear is the sound of one hand clapping! Our DiskMaster™ management software lets you set up password-protected partitions that are easily accessible via the Control Panel. ProDOS and A/UX are also supported. But don't take our word for it. Ask **Robert Wiggins**, *MacUser's* longtime business columnist, who gives the Protegé drive his "highest recommendation." Or **Steven Bobker**, contributing editor to *MacUser* and *Computer Shopper* who says the Protegé is "far and away the best value on the market."



All Protegé hard drives come pre-loaded with **OnLocation**, the amazing file-finding utility. And as a special bonus with **Quantum** drives, you'll also receive **Now Utilities** from **Now Software**.

A \$259.00 Value

# MacAvenue™

A Division of CompuAdd Corporation

## 800-926-6221

### Protegé Hard Drives

Capacity	External		Internal	
	Seagate	Quantum	Seagate	Quantum
20+MB	\$345	n/a	\$295	n/a
40+MB	\$395	n/a	\$325	n/a
50+MB	n/a	\$479	n/a	\$349
80+MB	\$525	n/a	\$465	n/a
100+MB	n/a	\$669	n/a	\$539
200+MB	n/a	\$979	n/a	\$899

FEDERAL  
EXPRESS





# Overnight for \$2



## NEW MacAvenue Software Paks!



### More Fun, Less Money

The new MacAvenue Fun Pak II gives you 5 great games: Solitaire Royale, Talking Moose, Dark Castle, Apache Strike and Shanghai. More than \$200 worth of software for \$49.95!

Fun Pak II. 29410.....\$49.95

### Make Life Better

The MacAvenue Better Living Pak gives you Dinner at Eight (including The Encore Edition and The Weeknight Gourmet), QuickLetter, Synchronicity and Protector Shark. Six packages worth more than \$300!

Better Living Pak. 29402.....\$49.95



## TIME AND PROJECT SCHEDULING

Claris

Claris MacProject II v1.21.....29740 \$366



## Communications

### ON THE MODEM

CompuServe

Macintosh Membership Kit v1.0.....30576 \$23

Farallon Computing

White Knight.....27664 \$89

Microcom

Carbon Copy Mac v1.04.....27708 \$119

Microsoft

MS Mail Workstation.....27676 \$83

Prodigy Services

Prodigy Startup Kit.....27726 \$27

Solutions Inc.

Faxgate Plus.....27712 \$237

Technology Works

Gracelan v1.0.....27750 \$375



### Save the Attorney's Fees

Write your will with the help of WillMaker 4.0, the software

package that gives you plain English instructions for writing a legally binding document. This program even explains complicated options for leaving property to minors. (All states but Louisiana).

WillMaker 4.0 (Nolo Press). 29888.....\$37

Tops

Tops Network Bundle/DOS.....27685 \$164

Tops Network Bundle/Mac.....27682 \$188

Traveling SW

LapLink Connectivity v3.2.....27711 \$99

### ON THE NETWORK

Dataviz

MacLink Plus v4.5.....27718 \$128

Farallon Computing

Timbuktu v3.1.....27667 \$95

Insignia Solutions

Soft PC AT EGA Add-on Module.....27716 \$125

Soft PC v1.3.....27714 \$245



## Education and Entertainment

### ON THE LEARNING CURVE

Broderbund Software

Calculus v1.2.....27964 \$58

Geometry v1.2.....27962 \$58

Physics v1.2.....27966 \$58

Type! v1.0.....27958 \$18

Davidson & Assoc.

Algebra Plus.....28042 \$37

Math Blaster Mystery.....27970 \$29

Math Blaster! v1.0.....27968 \$29

Electronic Arts

Mavis Beacon Teaches Typing.....28056 \$32

Goldstein & Blair

Mac Bible, 3rd edition.....28026 \$24

Mac Bible (Super).....28028 \$35

Great Wave

KidsMath v1.1.....27990 \$26

KidsTime v1.1.....27988 \$26

NumberMaze v1.1.....27992 \$26

Individual SW

Training for PageMaker.....28030 \$38

MECC

Exploring Microsoft Works.....28032 \$18

Number Munchers.....28034 \$29

Word Munchers.....28036 \$29

Sensible Software

Sensible Grammar v1.6.2.....28010 \$51

Simon & Schuster

Typing Tutor.....28008 \$28

Visionary Software

Synchronicity v2.5.....28040 \$48

JUST FOR THE FUN OF IT

Accolade

Mean 18.....28690 \$27

Ishido.....28776 \$32

Stratego.....28772 \$31

Activision

Cosmic Osmo.....28700 \$43

Manhole.....28696 \$29

Manhole (CD ROM).....28698 \$36

Addison - Wesley

Stupid Mac Tricks.....28750 \$19

Broderbund Software

Playroom.....28770 \$32

SimCity Supreme (Mac II).....28680 \$47

SimCity v1.2.....28678 \$29

SimEarth.....28764 \$45

Carmen San Diego Europe.....28674 \$29

Carmen San Diego USA.....28676 \$29

Carmen San Diego World.....28672 \$29

Carmen San Diego Time.....28774 \$29

Bullseye

Fokker Tri-plane v2.02.....28682 \$25

Casady and Greene

Mission Starlight.....28752 \$29

Sky Shadow.....28754 \$29

Centron

Casino Master.....28758 \$48

Casino Master Deluxe.....28760 \$58

Electronic Arts

Bards Tale.....28654 \$32

Chuck Yeager Flight Simulator.....28656 \$32

Earl Weaver Baseball.....28768 \$32

Pipe Dream.....28740 \$17

In-Line Design

Bomber v2.0.....28739 \$32

Darwin's Dilemma.....27840 \$30

Tesseract.....27838 \$30

Sierra-On Line

Kings Quest 1.....28724 \$29

Kings Quest 2.....28726 \$29

Kings Quest 3.....28728 \$29

Software Toolworks

Chessmaster 2100.....28748 \$32

Life & Death.....28658 \$32

Spectrum Holobyte

Faces.....28766 \$24

Falcon v2.2.....28614 \$30

Tetris.....28606 \$22

Welltris.....28604 \$25

XOR

MacGolf.....28708 \$35

MacGolf Classic.....28628 \$32

MacSci v1.0.....28756 \$39

NFL Challenge v1.2.....28630 \$57

More Than Fun

Now there's another mesmerizing Mac game —

Tesseract from Inline Design. A fast-moving board game that challenges you to remove all but one piece. Tesseract is addictive fun in either color or monochrome. A variety of layout shapes and 3 levels of play.

Tesseract (Inline Design). 27838.....\$30



## The Graphic Arts

### MOSTLY DRAWING/PAINTING

Adobe

Illustrator v3.0.....29789 \$348

Photoshop v1.0.7.....29266 \$498

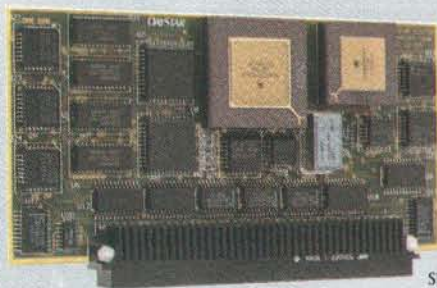
# MacAvenue

# 800-926-6221





# Customer Service is Our Most Important Product



## DayStar Gives You Top Speed

When you're ready for serious high-end performance — up to 50 MHz speed — you need

DayStar Digital's PowerCache IIci. Plug in this turbo-charged cache card and your IIci will be the fastest Mac alive, faster than even the IIx.

PowerCache 40 MHz IIci with co-processor (DayStar). 23651 .....\$1167

PowerCache 50 MHz IIci with co-processor (DayStar). 23649 .....\$1993

See listings for other DayStar PowerCache cards.

## KEYBOARDS, MICE, ETC.

<b>Advanced Gravis</b>	
ADB Mousestick	25286 \$66
<b>DataDesk</b>	
Mac 101 Keyboard Platnm (Plus)	25185 \$134
Mac-101 Keyboard, ADB	25180 \$134
Mac-101 Keyboard Beige (Plus)	25181 \$134
SWITCHBALL	25183 \$98
SWITCHBOARD	25182 \$159
<b>Kensington</b>	
Turbo Mouse ADB	25281 \$107
Turbo Mouse Plus	25280 \$107
<b>MacAvenue</b>	
101 Extended Keyboard ADB	25186 \$99
<b>MicroSpeed</b>	
MacTrac (SE, II, IIsx)	25285 \$75
<b>Mouse Systems</b>	
Little Mouse	25283 \$75
Trackball ADB	25284 \$69
<b>Seiko</b>	
DT3600 Digitizing Tablet	23734 \$295

## ACCESSORIES

<b>American Power</b>	
UPS 110SE	26292 \$207
UPS 370ci	26294 \$329
<b>Applied Engineering</b>	
QuadraLink	26917 \$205
<b>Bernoulli</b>	
Bernoulli 833C 44MB Tape Cartridge	57804 \$95
<b>Calcomp</b>	
WIZ	26918 \$152
<b>Cover-Up</b>	
Diskette Wallet 10pk (alligator)	26909 \$7.50
Diskette Wallet 10pk (blue)	26910 \$7.50
Diskette Wallet 3pk (alligator)	26911 \$5.50
Diskette Wallet 3pk (blue)	26912 \$5.50
Mac Plus KB Skin (81 Key)	25780 \$14.95
Mac Plus KB Skin (w/ # Pad)	25781 \$14.95
Mac SE/II 101 KB Skin	25782 \$14.95
Mac Plus/SE Dust Cover	26894 \$8
<b>Fellowes</b>	
Compact Personal Shredder PS 50	52655 \$119
<b>Inland</b>	
3 Mode Surge Protector	40505 \$14.50
<b>Innovative Technology</b>	
The Library (grey)	26903 \$14
The Library (black)	26905 \$14
<b>Interex</b>	
9 Pin Male to 9 Pin Male	26298 \$7.95
Keyboard Replacement Cable, 3ft.	26900 \$7
Mac 128/512 to Hayes DB9 to 25pin, 6ft.	26281 \$8
Mac 128/512 to Imgrwr DB9 to 25pin	26282 \$8
Mac to SCSI 25pin M to 50pin M 2ft.	26280 \$13
Mac to SCSI System Cable, 6ft.	26290 \$17
MacPlus Peripheral Adapter cable, 1ft.	26283 \$8
MacPlus, SE, II to Apple Modem	26284 \$8
MacPlus, SE, II to Hayes DIN8 to 25pin	26285 \$8
MacPlus, SE, II to Imgrwr DIN8 to 25pin	26286 \$8
MacPlus, SE, II to Imgrwr II DIN8 to DIN8	26287 \$8
Mini DIN-8 to Mini DIN-8 Null	26297 \$7.95
SCSI Terminator, 50pin M/F Daisy-Chain	26295 \$18
SCSI Terminator, 50pin male	26296 \$18
<b>Irwin Magnetics</b>	
External Tape Back-Up 5040/60	23832 \$529
External Tape Back-Up 5080/120	23833 \$719
<b>Kensington</b>	
Apple RGB Anti-Glare Filter	26891 \$64
Mac II Monitor Extended Kit	26899 \$32
Mac II Monitor Stand	25580 \$64
Mac II Stand and Cable Kit	26892 \$64



## "Cream of the 2-D Crop" - Infoworld

Generic CADD from Generic Software gives you powerful computer-aided design features and sophisticated tools — all the tricks of the trade — at a price that's only a fraction of other CAD package prices.

Generic CADD (Generic SW). 29280.....\$372

## Kensington (continued)

Mac II System Stand	26887 \$24
Masterpiece Mac II	26893 \$103
SE Anti-Glare Filter (beige)	26882 \$32
SE Anti-Glare Filter (platinum)	26883 \$32
Security Kit	26884 \$33
System Saver Plus (beige)	26888 \$64
System Saver Plus (platinum)	26907 \$64
System Saver SE	26889 \$63
Tilt/Swivel Monitor Stand	25582 \$24
Universal Printer Stand	26896 \$17
<b>MacAvenue</b>	
Fuji Rainbow Diskettes-1.44M DS/HD	47496 \$15.95
Keyboard drawer	41753 \$19
Teak 3.5 Double Rolltop Box (90)	41601 \$29
Teak 3.5 Single Diskette Box (45)	41600 \$17.99
Teak Keyboard Drawer	41752 \$69

## More Serial Ports

Expand your system's expandability. Applied Engineering's easy-to-install

QuadraLink lets you add four additional serial ports to your Macintosh. Includes a "shadow driver" so that all the new ports will be recognized by virtually all software.

QuadraLink (Applied Engineering). 26917 .....\$205



<b>Pace</b>	
MacAvenue Carrying Case	26898 \$65
MacAvenue Carrying Case Extended Kybd	26901 \$76
<b>Sony</b>	
3.5 Diskettes 1.44MB 10pk	57440 \$24.95
Sony 3.5 Diskettes 800KB 10pk	57401 \$13.95
<b>Sophisticated Circuits</b>	
PowerKey	25030 \$64
<b>TrippLite</b>	
SpikeBar SK6-6	40510 \$22

## SOUND INTERFACES

<b>Articulate Systems</b>	
Voice Navigator II	23736 \$649
<b>Farallon Computing</b>	
Hyperdialer	26886 \$32
MacRecorder	23730 \$158
<b>Passport Designs</b>	
MIDI Interface	23732 \$76



## Writing and Publishing

## WORD PROCESSING, WRITING

<b>Ashton-Tate</b>	
FullWrite Professional v1.5	30601 \$215
<b>Claris</b>	
Claris MacWrite II v1.1	30586 \$142
<b>Microsoft</b>	
Microsoft Word v4.0	30582 \$245
Microsoft Write v1.0	30584 \$83
<b>Nolo Press</b>	
WillMaker v4.0	29888 \$37
<b>WordPerfect</b>	
WordPerfect Mac v2.0	30591 \$298
<b>PAGE LAYOUT PUBLISHING</b>	
<b>Aldus</b>	
PageMaker v4.0	29781 \$497
<b>Claris</b>	
Claris SmartForm Designer	29200 \$289
<b>Ventura</b>	
Ventura Publisher v3.0	29906 \$582

## UTILITIES FOR WRITERS/PUBLISHERS

<b>DeltaPoint</b>	
Taste	30638 \$86
<b>Lexiprise</b>	
MacProof v3.2.3	30631 \$115
<b>Lifetree</b>	
Correct Grammar v2.0	30633 \$49
<b>Reference Software</b>	
Grammatik Mac v2.0	30634 \$50

## Fonts and Font Utilities

<b>Adobe</b>	
Adobe Plus Pack v1.0	29834 \$119
Streamline v2.0	29269 \$124
TypeAlign v1.0.4	29826 \$59
TypeManager v2.0	29825 \$57
<b>Broderbund Software</b>	
Typstyler	30450 \$115



## Business Software

## INTEGRATED/BUNDLED APPLICATIONS

<b>Microsoft</b>	
Microsoft Works v2.0 w/ Quicken v1.5	30580 \$199

## ACCOUNTING/BOOKKEEPING

<b>ChipSoft</b>	
Turbo Tax	28500 \$51
<b>DAC</b>	
Easy Light Checkbook Accounting v2.0	28475 \$41
<b>Intuit</b>	
Quicken v1.5	28458 \$39
<b>Meca</b>	
Managing your Money v4.0	28467 \$142
<b>Reality Software</b>	
WealthBuilder v1.0	28496 \$145
<b>Softsync</b>	
Accountant Inc. Professional v2.0	28480 \$345
<b>Softview</b>	
if x: Personal Tax Analyst	28498 \$47
MacIntax 1040 Federal 1990	28502 \$59
<b>Software Toolworks</b>	
Dollars & Sense v5.0	28465 \$86
<b>Timeslips</b>	
Timeslips III v2.0	28504 \$196

## DATA ANALYSIS AND PRESENTATION

<b>Odesta</b>	
Data Desk v3.0	27818 \$458

## DATABASE

<b>Acias</b>	
4th Dimension v2.1	27780 \$485
File Force	27820 \$247
<b>Claris</b>	
Claris FileMaker Pro	27789 \$216
<b>I.B.S.</b>	
DataClub v1.1	27748 \$199



## HP Printing Utility

MacPrint lets you print from any Mac application to the Hewlett-Packard LaserJet and Deskjet series printers as well as the Epson EPL 6000. Convenient Chooser-level driver selection provides straight forward Mac printing.

MacPrint v1.2 (Insight). 30428 .....\$94

<b>Fox Software</b>	
FoxBase + Mac v2.1	27791 \$292
<b>Microsoft</b>	
Microsoft File v2.0A	27798 \$123
<b>MySoftware</b>	
MyAdvanced MailList v2.0	27817 \$29
<b>Preferred Pubs</b>	
Database v1.5	27834 \$67
<b>Sensible Software</b>	
Bookends v1.2	27830 \$51

## OFFICE PRODUCTIVITY PROGRAMS

<b>Microsoft</b>	
Microsoft Mail v2.0	30496 \$85
<b>Power Up</b>	
Letter Writer Plus v1.0	30440 \$54

## SPREADSHEET PROGRAMS/TEMPLATES

<b>Informix</b>	
Wingz v1.1	30184 \$253
<b>Microsoft</b>	
Microsoft Excel v2.2	30180 \$245

MacAvenue

800-926-6221







## Enhanced microLaser

Texas Instruments has added 16 page-per-minute printing speed to the popular microLaser, awarded 4 1/2 mice from MacUser. The new TI microLaser XL has the same quality output as the original microLaser but has added upgrade flexibility.

NEW! TI microLaser XL (35-font). 22859..\$3095

## Hardware

### STORAGE DEVICES

IBM LPS External Protegé.....	24398	\$479
IBM LPS External Protegé.....	24399	\$669
IBM LPS External Protegé.....	24400	\$979
IBM LPS Internal - (llcx,c).....	24194	\$349
IBM LPS Internal - (llcx,c).....	24195	\$539
IBM LPS Internal - (llcx,c).....	24196	\$899
IBM LPS Internal - (SE-llx).....	24198	\$349
IBM LPS Internal - (SE-llx).....	24199	\$539
IBM LPS Internal - (SE-llx).....	24200	\$899
IBM External Protegé.....	24380	\$345
IBM External Protegé.....	24381	\$395
IBM External Protegé.....	24382	\$525
IBM Internal - (llcx,c).....	24184	\$295
IBM Internal - (llcx,c).....	24185	\$325
IBM Internal - (llcx,c).....	24186	\$465
IBM Internal - (SE-llx).....	24180	\$295
IBM Internal - (SE-llx).....	24181	\$325
IBM Internal - (SE-llx).....	24182	\$465
Seiko HD Carrying Case.....	26908	\$24



## The Future of Communication

MacAvenue's Protegé modems are reliable, easy to operate and priced to move! Each modem is shipped with QuickLink II software.

Protegé 2400 SendFax9600. 22316.....	\$139
Protegé 2400 external. 22315.....	\$139
Protegé V.42bis. 22317.....	\$219

Applied Engineering	
800K Floppy Drive.....	24735 \$205
High-Density 3.5 1.44K Floppy Drive.....	24736 \$239
MacAvenue Communications	
MacFile 1.2MB DF0200.....	24732 \$550
MacFile 360K DF0100.....	24738 \$519
MacFile 360K/1.2MB DF0102.....	24733 \$725
MacFile 360K/1.44MB DF0104.....	24737 \$745
MacAvenue	
800K Floppy Drive.....	24731 \$99
MacAvenue	
MacFile 40-40.....	24384 \$2195
MacFile 18 Interface Kit.....	23834 \$48
MacFile 44MB.....	24385 \$1429
MacAvenue Technology	
MacFile 5.25 Drive.....	24740 \$299
MacFile 2.4 (3.5).....	24730 \$328

### PRINTERS, SCANNERS AND FAXES

Adobe	
Postscript for LJ-II.....	38432 \$299
Complete PC	
Complete Page Scanner.....	22753 \$758
Dest	
Personal Scan w/ Recognize! Software.....	22762 \$699
Digital Vision	
Computer Eyes 8/W.....	22758 \$198
Computer Eyes Color.....	22759 \$348
Dove	
DoveFax-External.....	22701 \$297
Epson	
ES-300C Color Scanner w/ I/F.....	22765 \$1824
Kodak	
M150 Mac Portable.....	22855 \$519
Logitech	
ScanMan 32.....	22751 \$319
MicroTek-IMS!	
Microtek 300Z Color Scanner.....	22755 \$1945
Orchid	
OrchidFAX Modem.....	22702 \$457
Relisys	
Telax RA2110.....	22700 \$895
Seiko	
Label Printer.....	22852 \$184
Labels for Seiko Label Printer.....	35623 \$11.99
Seikasho	
Personal Printer SL2000AP.....	22857 \$235
Texas Instruments	
17 Font microLaser w/ ATalk board.....	22856 \$1429
17 Font microLaser XL w/ ATalk board.....	22858 \$2795
35 Font microLaser w/ ATalk board.....	22851 \$1749
35 Font microLaser XL w/ ATalk board.....	22859 \$3095
Envelope Feeder.....	23056 \$279
Legal Paper Tray.....	23057 \$59
microLaser Toner Cartridge.....	38311 \$46

### COMMUNICATIONS-MODEM

Applied Engineering	
DataLink Express w/ MNP-5/Send Fax.....	22312 \$239
DataLink/Mac w/ MNP-5/Send Fax options.....	22313 \$275

Global Village	
Teleport Modem.....	22311 \$134
Teleport Fax 9600.....	22314 \$195
Hayes	
Smartmodem 9600.....	49578 \$899
MacAvenue	
2400 External w/o SW.....	49557 \$119

### COMMUNICATIONS-NETWORK

Asante	
MacCon+ IIE thk/thn.....	22538 \$375
MacCon+ IIE thk/UTP.....	22529 \$375
MacCon+ SE30E thk/thn.....	22526 \$375
MacCon+ SE30E thk/UTP.....	22531 \$375
MacCon+ SEE thk/thn.....	22525 \$295
MacCon+ SEET thk/UTP.....	22532 \$295
Dayna Communications	
EtherPrint.....	22541 \$355
Farallon Computing	
Liason v3.0.....	27744 \$259
PhoneNET Connector DB-9.....	22511 \$31
PhoneNET Connector Din-8.....	22513 \$31
PhoneNET Repeater.....	22517 \$313
PhoneNET StarController.....	22516 \$824
Portable Pack.....	22519 \$329
Interex	
Localtalk connector DB-9 to Din 3.....	22520 \$32
Localtalk connector Din-8 to Din 3.....	22521 \$32
Phone Connector DB-9.....	22522 \$25
Phone Connector Din-8 w/ cable.....	22523 \$25
NuVotek	
NuVotek II.....	22536 \$275
NuVotek SC.....	22535 \$389
Shiva	
NetModem V.32 9600 baud.....	22528 \$1425
NetSerial X232.....	22504 \$275
Technology Works	
Mac II Ethernet Kit.....	22539 \$275
Mac II/10t Ethernet Kit.....	22540 \$275

**Double Your Drive Capacity**

You can double the effective storage capacity of hard disks (and diskettes) with Double-Up™ with DiskDoubler from Sigma Designs. This NuBus card compresses and decompresses graphics, data and application files fast.

Double-Up with DiskDoubler (Sigma). 23737.....\$179

### MONITORS AND VIDEO CARDS

MacAvenue	
Protegé Dual Page Display w/ Mac II Card.....	22017 \$895
Protegé Dual Page Display w/ SE Card.....	22015 \$895
Protegé Dual Page Display w/ SE/30 Card.....	22016 \$895
Protegé Full Page Display w/ Mac II Card.....	22013 \$495
Protegé Full Page Display w/ SE Card.....	22011 \$495
Protegé Full Page Display w/ SE/30 Card.....	22012 \$495
Micron	
Mac II 8-Bit 1024X768.....	23544 \$585
Mac II 8-Bit 640X480.....	23543 \$345
SE/30 8-Bit 1024X768.....	23542 \$585
SE/30 8-Bit 640X480.....	23541 \$345
RasterOps	
RasterOps 24STV.....	23658 \$1549
RasterOps 85.....	23536 \$459
RasterOps 245.....	23537 \$759
RasterOps 264/SE30.....	23539 \$685

**The Global Village Teleport Modem (or Fax)**

The compact (3" x 5 1/2" x 1 1/2") Teleport Modem is the first full-featured modem that connects to your Macintosh via Apple Desktop Bus. The Teleport Fax unit offers send/fax capability at 9600 bps.

Teleport Modem. 22311.....\$134

Teleport Fax 9600. 22314.....\$195

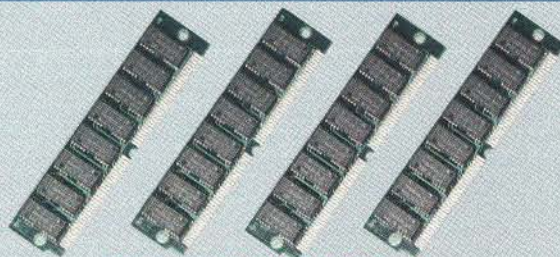
RasterOps 364.....	23540 \$974
Grey Scale 19" monitor GS for Mac II.....	22007 \$1614
Seiko	
14" Color RGB.....	22002 \$595
20" Color w/ 8-Bit 1024X768 Mac II.....	22018 \$2770
20" Color w/ 8-Bit 1024X768 SE/30.....	22019 \$2770
20" Trinitron Color Monitor w/o card.....	22009 \$2395
Sigma Designs	
Colormax 19" monitor w/ Mac II adapter.....	22000 \$4645
L-View Multi-Mode 19" w/ Mac II adapter.....	22008 \$1495
PageView 15" w/ Mac II adapter.....	22100 \$1050
PageView 15" w/ SE adapter.....	22101 \$999
PageView 15" w/ SE/30 adapter.....	22106 \$1050
SilverView 21" w/ Mac II adapter.....	22104 \$1599
SilverView 21" w/ SE adapter.....	22107 \$1599
SilverView 21" w/ SE/30 adapter.....	22103 \$1599
MacAvenue	
Full Page Monitor w/o card.....	22010 \$395

### ACCELERATOR AND EXPANSION BOARDS

DayStar	
030 25MHz Ilicx w/ co 68882.....	23640 \$1499
030 33MHz Ilicx w/ co 68882.....	23641 \$1899
030 40MHz Ilicx w/ co 68882.....	23642 \$1999
030 50MHz Ilicx w/ co 68882.....	23643 \$2599
50MHz PowerCache Ilicx w/ coprocessor.....	23649 \$1993
50MHz PowerCache Ilicx w/ coprocessor.....	23650 \$1687
40MHz PowerCache Ilicx w/ coprocessor.....	23651 \$1167
40MHz PowerCache Ilicx w/ coprocessor.....	23652 \$947
Technology Works	
Ilicx Cache Card w/64K.....	23648 \$269

### MEMORY EXPANSION

Applied Engineering	
1MB Upgrade for MacRam Portable Card.....	25488 \$359
MacRam Portable Card w/ 1MB.....	25487 \$499
MacAvenue	
1MB TI Laser Memory Upgrade.....	25489 \$159
Interex	
Tool kit; 3 pieces.....	26881 \$15
Technology Works	
2 X 1MB SIMM Kit 80ns.....	25480 \$108
4 X 1MB SIMM Kit 80ns.....	25482 \$216
4 X 4MB Ilicx SIMM Kit.....	25490 \$1195
4 X 4MB Ilicx SIMM Kit.....	25491 \$1399
4 X 4MB SIMM Kit 80ns.....	25481 \$1120
Mac Portable 1MB Upgrade Kit.....	25485 \$389
Mac Portable 3MB Upgrade Kit.....	25486 \$1195
2 X 4MB Module for Mac Ili, LC, Ilicx.....	25492 \$560
3MB Module for Mac Classic.....	25495 \$215



## A Great Deal! \$54/Megabyte

Get the most processing power out of your Mac: Only the best surface-mounted 80 nanosecond memory products. Call for pricing chart.

2 x 1MB SIMM Kit —80ns (Technology Works). 25480.....	\$108
4 x 1MB SIMM Kit —80ns. 25482.....	\$216
2 x 4MB Module for Mac Ili, LC, Ilicx. 25492.....	\$560

# 800-926-6221

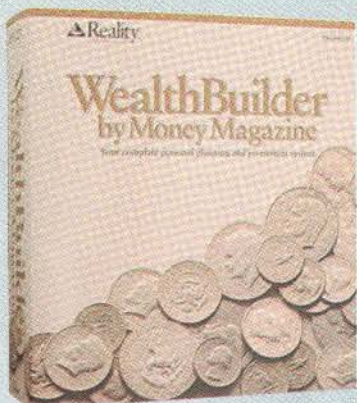


# Try MacsFax 800-933-9002

## Build Your Wealth

**WealthBuilder** by *Money* magazine will guide you through the stormy waters of financial planning and give you advice on investing, saving and strategic planning. You just ask questions, **WealthBuilder** has all the answers.

**WealthBuilder v1.0** by *Money* magazine (Reality Software). 28496.....\$145



## OTHER UTILITIES

<b>Abbott Systems</b>		
CanOpener v1.1 .....	30348	\$63
<b>Baseline</b>		
INIT Manager .....	30542	\$35
Thunder 7 .....	30570	\$58
<b>CE Software</b>		
Disktop v4.0 .....	30354	\$63
QuickKeys v2.0 .....	30357	\$94
<b>Custom Applications</b>		
Freedom of Press Light v3.0 .....	30554	\$58
Freedom of Press v3.0 .....	30444	\$255
<b>Fifth Generation</b>		
Suitcase II v1.2.3 .....	30402	\$49
<b>GDT</b>		
ParaLink Express .....	30548	\$99
<b>Insight Development</b>		
MacPrint v1.2 .....	30428	\$94
<b>Now Software</b>		
Now Utilities v2.0 .....	30498	\$75
<b>Power Up</b>		
Calendar Creator v1.0 .....	30432	\$41
Letter Writer Plus/Address Book Plus v1.0 .....	29404	\$85



## CD-ROM Software

## ON THE LEARNING CURVE

<b>Wayzata</b>		
US Civics .....	28012	\$79
World Factbook 1989 .....	28014	\$79

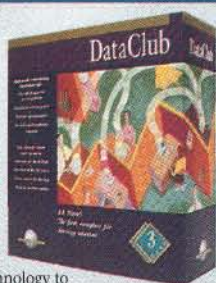
## GRAPHIC ART COLLECTIONS

<b>NEC</b>		
Clip Art 3D .....	29880	\$245
Image Folio .....	29882	\$245
Photo Gallery .....	29884	\$245
Type Gallery .....	29886	\$245
<b>Wayzata</b>		
Quick Art .....	29302	\$187
US Seals .....	29304	\$55

## New Network Software

**DataClub** uses Virtual Server™ technology to create a powerful shared disk for your entire network. Maximize resources and simplify information sharing with the most cost effective network that is easy to use, manage and expand.

**DataClub 1.1** (International Business Software). 27748 .....\$199



# Why Buy From MacAvenue?

That's as easy as 1, 2, 3!

1

## 30-Day Money-Back Guarantee

Every hardware product and every office accessory MacAvenue sells will give complete satisfaction. If not, return it in the original packaging within 30 days of purchase for a full refund. Consumable items, opened software, videotapes and shipping costs are not refundable.

2

## Toll-Free Technical Support • 90-Day Product Replacement

If you experience a problem with anything you purchase from MacAvenue, call our product support staff at 1-800-766-6221 weekdays from 8:00 am to 7:00 pm, CST. We will replace the item and pay Federal Express shipping both ways.

3

## One-Year Limited Warranty

For up to one full year after your purchase, MacAvenue will replace or repair (at our option and without cost to you) any product with which you are not completely satisfied, and we will pay for Federal Express return freight to you.

Everything at MacAvenue is designed to give you the affordable, reliable Macintosh products you want when you want them.

- Orders placed by 8:00 pm, CST, weekdays for in-stock items ship the same day (barring system failure) with a \$2 overnight delivery charge. Purchases under \$50 will be shipped UPS 2-day, still only \$2.
- For your convenience, we accept VISA, MasterCard, Discover or American Express — no surcharge will be added.
- If you use a credit card to pay for your order, your account will not be charged until we ship your order.
- If we have to split an order into two shipments, you will be charged only once for shipping. All orders under \$30 will be shipped UPS Ground.
- COD orders accepted (Add \$8, including shipping)
- Corporate and institutional purchase orders accepted, \$500 minimum for the first order, \$50 thereafter.

Look for MacAvenue products in the following CompuAdd Superstores:

- Chicago, Illinois — Golf Rd.
- Portland, Oregon — 117th Ave
- Louisville, Kentucky — Hurstborne Ln.
- Austin, Texas — Shoal Creek

Watch for More Store Openings Soon!



Call now  
for FREE  
catalog!

# 800-926-6221

Key Code  
871

# MacAvenue™

A Division of CompuAdd Corporation

12303 Technology Boulevard — Austin, Texas 78727

MacAvenue is a trademark and CompuAdd is a registered trademark of CompuAdd Corporation. Mac, Macintosh, HyperCard, and Apple are registered trademarks of Apple Computer, Inc. All other trademarks are the property of their respective companies. All return items must be accompanied by a return merchandise authorization (RMA) number. Prices and product descriptions are subject to change without notice. Neither CompuAdd nor MacAvenue is liable for damage due to omissions or typographical errors.

# MacAvenue



## Safety, Maintenance and Repair Utilities

## DATA ORGANIZATION

<b>On Technologies</b>		
OnLocation v1.0 .....	30434	\$75

## DATA STORAGE, MANAGEMENT/REPAIR

<b>Baseline</b>		
APB Express v1.0 .....	30544	\$55
<b>Central Point</b>		
Mac Tools Deluxe v1.01 .....	30365	\$79
<b>Microcom</b>		
911 Utilities v1.0 .....	30550	\$89
Complete Undelete v1.0 .....	30420	\$49
<b>Salient</b>		
Disk Doubler v3.0 .....	30546	\$47
<b>Symantec</b>		
Norton Utilities for the Mac v1.1 .....	30436	\$84
Sum II v2.0 .....	30340	\$98

## SHORTCUT AND TIME SAVING UTILITIES

<b>Central Point</b>		
Copy II Mac v7.2 .....	30362	\$24
<b>Zedcor</b>		
Deskworks .....	30524	\$228

## SCREEN SAVER UTILITIES

<b>Berkley Systems</b>		
After Dark v2.0 .....	30425	\$24
<b>Fifth Generation</b>		
Pyro v4.0 .....	30399	\$25
<b>Ibis Software</b>		
Protector Shark .....	30538	\$31

## VIRUS DETECTORS AND ERADICATORS

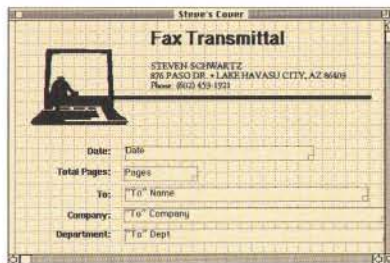
<b>Microcom</b>		
Virex .....	30413	\$59
<b>Symantec</b>		
SAM v2.0 .....	30342	\$67



department. Using a cover page and this information, you can easily perform group transmissions of a single document (see "Designing a Cover Page"). Fax addresses that you use frequently can be assigned ⌘-key equivalents so that you can select them with a single keystroke. However, the phone book has two shortcomings. First, the phone book lists an individual's name, but not the company name. If you deal with a lot of people, you might find it difficult to send a fax to a particular company if you can't remember the name of the contact person. To be really useful, the phone list should display both the contact name and the company. Second, you cannot sort entries in the phone list. New entries are simply appended to the end of the list. If your phone book contains many entries, you can have trouble even finding the person you want to fax.

The DataLink's AE Fax software contains an Out Box, which serves two purposes. It shows the status of all faxes (received, error, busy, queued, and so on) and it serves as a record of sent faxes. Unfortunately, as long as a fax is listed in the Out Box—whether sent or not—an image of it is stored on disk in the System Folder. To save disk space, you must remove the files from the Out Box, which reclaims the disk space but also eliminates the record of these faxes having been sent.

The View option for examining faxes is wholly inadequate. Each fax page is shown as a 1-inch-square thumbnail—much too tiny to read or check for accuracy. It is useful only for seeing if all pages made it into the fax file and if the document sent appears to be the one you intended.



**Designing a Cover Page** Using any paint or draw program, you design your cover page as a graphic or PICT object. Next, you convert it to a fax image by printing with the Chooser device AE Send-Fax selected. Within the AE Fax program, you then finish creating the cover by pasting the graphic from the fax file into a cover-page file. Finally, you can pick and position fields to be automatically filled in each time you send a fax, including the name, company, department, and phone number of the sender and recipient, as well as the date and total number of pages in the fax.

### Sending Faxes

To send faxes, you just select the Chooser device AE Send-Fax and issue a Print command from any of your favorite programs. All print jobs are then translated into fax format and sent out through the fax modem. You can also schedule them for transmission at a later time, as long as it's within the next 24 hours. In addition, a variety of Page Setup and Print options are provided. Faxes can be either letter or legal size; and either standard (100 dpi) or high-quality (200 dpi) resolution; they can be sent with or without a cover page and headers, and pages with blank space at the end can automatically be trimmed, saving transmission time. Using the Hold feature, you can send multiple documents to a location in a single transmission.

Recipients of the test faxes that I sent all reported that the quality was

very good. As with other fax software, though, interword spacing when using styles such as italics suffers in standard-quality faxes. Since Apple's LQ fonts are not provided, you will have to purchase them separately or use Adobe Type Manager if you want high-quality output.

DataLink/Mac's transmission times are similar to those for other fax modems. For example, it took 4 minutes and 21 seconds to send a high-quality 3-page fax from Microsoft Word. Sending a 3-page PageMaker 4.0 document to a 4800-bps fax modem took about 6 minutes. Transmitting files is a background operation, but converting files to fax format occurs in the foreground, tying up the Macintosh, and complex documents can occasionally take a long time to convert. The 3-page PageMaker file, for example, took 4 minutes. Microsoft Word documents, however, converted quickly.

### Fax Problems

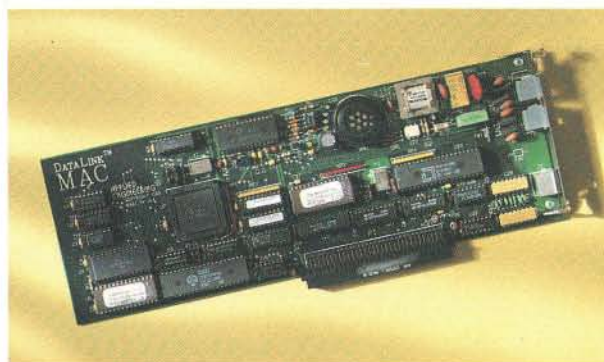
I experienced a number of serious problems while using the DataLink/Mac, including several system crashes and applications that unexpectedly quit during the conversion process. Removing my normal INITs failed to correct these problems. Two crashes even trashed parts of the fax software, which then needed to be reinstalled. In my tests, I was able to send faxes without problems only about 60 percent of the time. All files eventually reached their destinations but many took two tries.

The DataLink/Mac's performance as a Hayes-compatible data modem is flawless, and the availability of MNP Class 5 data compression is a plus. As a fax modem, however, DataLink/Mac's only significant selling point is that it's a NuBus board, so it doesn't take up desk space or require a separate power supply. In the same price range, however, you can currently buy an external fax modem with the same feature list—plus "receive" capabilities and more robust software. Before the DataLink/Mac can be recommended, the software needs further work and more features, and receive capability should be added to the board.

—Steven Schwartz

See Where to Buy for contact information.

DataLink/Mac from  
Applied Engineering.



MARK JOHANN



# IT'S ABOUT TIME SOMEBODY PUT HARD DRIVES IN THEIR PLACE.

Not in front, on the side, over or under.

But all the way to the back (which is why we named this hard drive Bacster™). And it does have a tendency to go unnoticed.

What doesn't go unnoticed is the Quantum drive inside with effective access times as low as 8ms\* and 50, 100 or 200 MB capacities.



There's also the free copy of Silverlining™ that comes with every La Cie drive. Silverlining is the #1 rated hard drive management program that gives you up to 30% more speed

than the competition.

And wait, there's more. A free copy of Norton Utilities® for the Macintosh® (A total software value of \$300).

Here's something bold and new. A two year limited warranty† unlike any other because it's renewable.

If anything goes wrong with your Bacster Quantum drive, call La Cie. We'll repair or replace it immediately, and renew the warranty for another two years.

And since La Cie is a Plus Development company (backed by \$400 million in assets), you can rest assured we'll outlast our warranty.

If that's not enough to convince you, maybe this will. Visa and Mastercard accepted. Volume discounts available. Free delivery. Call now.

- For Mac Plus & SE
- Free Silverlining and Norton Utilities
- Double burn-in
- Quiet and light
- Backed by \$400 million in assets
- Toll-free technical service and support
- 2 year renewable limited warranty
- Free delivery



As low as  
**\$599**

**1-800-999-0143**  
(ext. 55)



TECHNOLOGY WITH A SILVERLINING.™

"La Cie...the King of consumer choice."—MacWorld

\*Typical application access time using DnCache™. Restrictions apply. Please contact La Cie for complete warranty information. © 1999 La Cie, Ltd. Bacster, Silverlining, La Cie and the La Cie, Ltd. logo are trademarks of La Cie, Ltd., A Plus Development Company. All other trademarks are the property of their respective holders. All prices, specifications, terms and descriptions of products and services herein are subject to change without notice or recourse. La Cie, Ltd., 19552 SW 90th Court, Tualatin, OR 97062. Phone (503) 691-0771, Fax (503) 692-8289.

Circle 52 on reader service card



★  
Address Book, Phone Dialer, Envelope-  
and Label-Printing Desk Accessory

## INTOUCH

**Pros:** Unlimited records; instantaneous searches; multiple layouts for printing envelopes and labels; prints bar codes, facing identification marks (FIMs), and message lines; exports in many file formats; phone-dialing macros.

**Cons:** No sort capabilities; cumbersome importing procedure; lacks on-screen help; no hot-key pop-up option.

**Company:** Advanced Software.

**Requires:** Mac 512KE. **List price:** \$69.95.



As a writer, I need to keep in close contact with many people. To help, I've always used a phone-dialing desk accessory, several databases of client addresses, and a couple of envelope-printing utilities. Unfortunately, they're all separate programs. Now I can handle all those functions with a single DA.

## Database Features

The Intouch screen is divided into two windows (see "Intouch's Main Window"). The left window is for addresses, and the right is for notes and phone numbers. The note window for each record can contain 32,000 characters—the equivalent of about 14 document pages. You can scroll both windows. The note window has its own zoom box that expands to 3 by 5 inches.

Each window is treated as a separate field. In the address window, you can enter information in any order, but you must use a carriage return to end each line. Whatever you enter in the address window is exactly what will print when you generate a label or an envelope. You should note, however, that the U.S. Postal Service frowns on addresses that do not end with zip codes—finishing with an "ATTN: Mr. Jones" is a no-no.

A lightning-fast, case-insensitive search option lets you quickly find any record in the database. If you just want to browse through the file, you can have a hard time finding a particular record. You cannot sort the database in this version of the program. Cutting and pasting with Intouch's

insert function to position new records helps overcome this limitation somewhat, but it's definitely the hard way. Since searches examine both the address and note windows, you might want to add keywords in the note window to help you identify common addresses; for example, use *Mac* to indicate a Macintosh software or hardware vendor. In addition to the Search button, you can use the arrow icons to move to the next, previous, first, or last record. There's also a Go To button that can take you directly to any record number.

If you already have a database of names and addresses that you'd like to use, Intouch can import two file types: QuickDex and tab-delimited text files. Most databases and spreadsheets can create tab-delimited files, so it is relatively easy to move files into Intouch. Then, however, the fun begins—Intouch has no way of knowing where an address ends and the phone number and optional notes start. To finish importing, you must manually split the two pieces apart for each address. Since my address file had more than 350 entries, this meant that I spent the next few hours fixing the file. According to Intouch's product manager, the next version might provide an option to search for and automatically split each record after the zip code. Intouch can export 18 popular file formats, plus ASCII text.

A snapshot button (the tiny camera icon in the main window) enables you to easily move information between Intouch and other programs via the Clipboard. You can move addresses into Intouch by copying them

to the Clipboard and then pressing the Option key while clicking on the snapshot button. Of course, normal Macintosh editing keys and commands are also supported.

## Number, Please

If you have a modem, Intouch can dial phone numbers found in the note window. By default, the program dials the first number listed, but you can dial another number by positioning the cursor in front of it. If you don't have a modem, you can dial through the Mac's speaker, placing your phone's mouthpiece near it. According to the company this works best with earlier Macs (a 512KE, a Plus, or an SE).

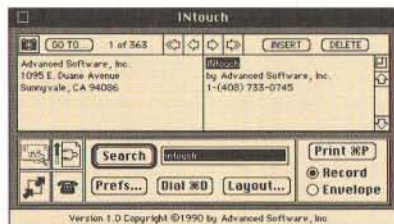
Other options let you specify a prefix to dial (for example, 1, 9, or a calling-card prefix), a string to end each dialing action (:b can be used, for example, to hang up the modem), and your local area code. You can also create macros and assign them to ⌘-1, ⌘-2, or ⌘-3.

## Printing

You can create and save up to 15 styles for envelopes and labels—specifying the print area; text font, style, and alignment; paper-feed option; and whether or not to include a bar code. For envelopes, you can also choose any style of return address (with text or graphics), specify a font, and select a message to print at the bottom. You can also use Intouch to print self-addressed envelopes, and envelopes without the mailing or return address. Records can be printed with the address information, notes, or both. Supported printers include the Image-Writer, all LaserWriters, and the HP DeskWriter.

Intouch quickly became one of my most frequently used DAs. The next release should make the product even more flexible and easier to use. According to the company, new features will include the ability to perform HyperCard-style sorts on any word in any line of the address field, support for multiple-address files, improved importing, network compatibility, and more custom options. The new version will be sent free to registered users. Either way, you will like this program.—Steven Schwartz

See Where to Buy for contact information.



**Intouch's Main Window** Option screens, accessed by clicking on the icons in the lower left corner of the screen, enable you to preview envelopes, pop up the Page Layout dialog box, import or export data, and set dialing options. The Layout button lets you create new envelope and label styles, return-address definitions (with graphics), and message lines.



# You Made the Right Choice Once...



## Why Stop Now?

### High-Performance Laser Printers from LaserMaster

#### ► PostScript® Printing for Macintosh II Users.

Power. Flexibility. Control. When you bought a Macintosh® you knew you were getting something truly special. A MaxWriter printer from LaserMaster™ will make you feel that way all over again. Choose from 400 x 400 dpi resolution all the way up to 800 x 800 TurboRes™ with LaserMaster's full line of high-performance laser printers for Macintosh II users.

MaxWriter printers offer superb PostScript printing — starting at just \$2,195. The compact MaxWriter 400 Personal Printer delivers crisp 400 x 400 dpi resolution, while the MaxWriter 600ks Laser Printer gives you 600 x 600 TurboRes output. Looking for more performance and higher resolution? The MaxWriter 800ks Laser Printer gives you fast 800 x 800 TurboRes output at up to eight pages per minute.



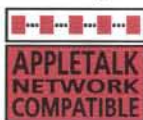
If you already own an Apple LaserWriter, you may be interested in a resolution boost from our complete line of printer controllers. Go from 300 dpi print quality to 800 x 800 TurboRes in seconds.

#### ► Technologically Speaking.

TurboRes, our patented resolution enhancement technology controls the position and height of pixels on the printed page and eliminates rough, stair-step edges between pixels. We've taken the power of TurboRes and combined it with Microsoft's® PostScript-compatible TrueImage™ software to give you the best possible print results — right from your desktop.

#### ► AppleTalk® and Ethernet Network Compatible

Need a fast network printing solution? All MaxWriter printers are accessible through the Chooser using Ethernet or LocalTalk® cabling. The result? Your MaxWriter printer is available to *any* Macintosh on the network.



#### ► Typographic Versatility

LaserMaster includes a collection of 50 premium Type 1 format typefaces with each of its products. Selected from the libraries of URW, ITC and Digital Typeface Corporation,™ LaserMaster typefaces offer you an expressive range of serif, sans serif

and decorative typestyles. And, you can continue to use Type 1 fonts from Adobe®, Bitstream® or Monotype® type libraries.



#### ► Free Sample Output

See for yourself the difference a MaxWriter can make in all of your PostScript printing — call LaserMaster today for more information and a free sample of actual output, (612) 944-9696, Dept. 286.



Macintosh gives you the power to create your best. Now LaserMaster gives you the power to print it. ■



6900 Shady Oak Road, Eden Prairie, MN 55344  
TEL: (612) 944-9696, FAX: (612) 944-9151

© 1991 LaserMaster Corporation. MaxWriter printers require a Macintosh II computer. TurboRes™ is a patented technology of LaserMaster Corporation. LaserMaster is a trademark and the LM logo is a registered trademark of LaserMaster Corporation. TrueImage is a trademark of Microsoft Corporation. The AppleTalk™ protocols and computer programs are licensed from Apple Computer, Inc. All other product names are trademarks or registered trademarks of their respective companies. Specifications subject to change without notice.


Circle 342 on reader service card



★  
Banner-Printing Program

## BANNERMANIA

**Pros:** Wide variety of banner types and design elements; produces high-quality color banners in minutes; uses Adobe Type 1 fonts as well as specialized fonts; can randomly cycle through banner patterns; easy and fun to use. **Cons:** Unimaginative selection of premade banners; no clip-art graphics included; no ability to import graphics; limited to two text lines. **Company:** Brøderbund Software. **Requires:** Mac Plus. Recommended: second disk drive. **List price:** \$59.95.

 If you're the kind of person who likes to announce things—birthdays, parties, your niece's graduation, the opening of your tenth store—then you should take a look at BannerMania, a superb product from Brøderbund that lets you produce banners of virtually any length, style, and color.

BannerMania has many advantages going for it: it's simple to use; it has a selection of customized fonts; it automatically sizes text; and it gives you the ability to customize a banner's color, size, patterns, and shape.

BannerMania enables you to make inventive banners and posters in a matter of minutes. Once you've typed in a 1- or 2-line message, you can change the basic banner components using five pull-down menus: Layout, Fonts, Effect, Color, and Shape. BannerMania offers a palette of 20 special effects, ranging from three-dimensional lettering to balloon backgrounds, and 27 banner shapes. By selecting the Paisley Up pattern from the Shape menu, and the Vibes effect from the Effects menu, I was able to make a pretty good approximation of a 1960s-era rock-and-roll concert announcement. One of the best features of the program lets you instantly change a message's shape—from an arch to a teardrop, from a ribbon to a wave—to see the effect the new shape has on your banner.

### Ready to Go

For those of you who want truly instant gratification, BannerMania also

includes a selection of more than 50 ready-made color and black-and-white banners. You can choose a ready-made banner and then substitute your own message for the pre-written one. I found the selection of premade banners, however, to be rather uninspired—the standard collection of “Happy Birthday!” messages you'd find on balloons.

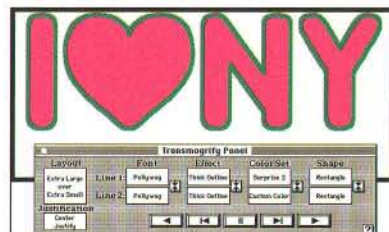
In fact, if there's a flaw in the design of BannerMania, it's in the conservative nature of the fonts and graphics. Most of the 19 included fonts are takeoffs on circa 1950s type styles, so many of the posters end up looking like Woolworth's advertisements or Barnum & Bailey circus posters. You can, however, import any typeface found in Adobe Systems' Type 1 font library into your banner.

BannerMania is essentially a text-based program. It includes a few graphic elements such as pointing fingers, hearts, and cowboy boots, but they are too plain for most uses. The ability to import graphic elements into the banners would improve the program greatly.

### Easy to Use, Easy to Color

Ease of use is one of BannerMania's biggest pluses. Besides its intuitive menu selections and on-screen help features, the program comes with a well-written and concise manual. The manual guides you through every step of creating a banner.

To get the most from BannerMania you need access to a color monitor and a color printer. You can choose from BannerMania's 68 colors or choose one of the program's 152 preassigned color sets. You can still produce color files in gray scale, but it



**Spontaneous Generation on an Apple** Even if you're no Michelangelo when it comes to design, with BannerMania you can create inventive banners quickly. Type a message and click on Transmogrify to cycle randomly through different colors, shapes, special effects, fonts, and sizes. You can stop the process when you see something you like, or lock individual features as they cycle by.

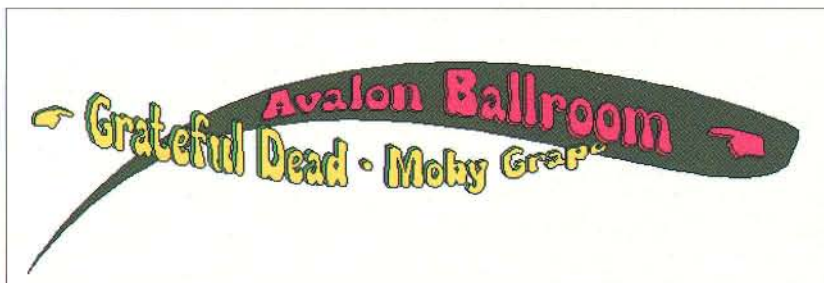
is much harder to design a color banner working only with color codes. BannerMania is ideal for producing high-quality gray-scale banners.

The banner's size is limited only by the printer's paper-handling ability. Your banner can be as small as one page or long enough to fit across your front window. You can stretch or compress text to fit on a specific number of pages. You can either change length without affecting height and vice versa, or you can reduce or enlarge both dimensions, keeping the same ratio by using a scale control.

If you use a laser printer, banners can be longer than one page but will have gaps where the edge of the paper is carried by the printer mechanism. It's even easier to use a printer with continuous feed or the ability to use special banner-size paper.

### Teaching Transmogrification 101

BannerMania's Transmogrify command enables you to randomly cycle (continues)



**Quick Concert Announcements** Special effects such as paisley shapes and vibrant fonts make it easy to create something like this 1960s-style poster. BannerMania has its own collection of fonts, but it's also possible to import Adobe Type 1 fonts into a banner. You create virtually all elements of a banner using an extensive set of pull-down menu commands.





## Visions in mass storage.

An endless horizon . . . the O•C•E•A•N view.  
Infinite expandability, ultimate convenience,  
superlative reliability, rugged strength  
and highest security.

State-of-the-art mass storage,  
rewritable magneto-optical technology:

- ▼ VISTA – 128MB, 3.5-inch cartridge
- ▼ TIDALWAVE – 650MB, 5.25-inch cartridge
- ▼ TRIDENT – 6.5GB (10 x 650MB cartridges)

# O•C•E•A•N

*Drives beyond the boundaries.*

For further information, give us a call.  
O•C•E•A•N Microsystems, Inc.  
246 East Hacienda Avenue, Campbell, CA 95008  
800.262.3261 408.374.8300  
fax 408.374.8309



Circle 33 on reader service card



through various patterns, shapes, and colors while keeping the message of the poster intact. ("Calvin and Hobbes" fans might remember how Calvin is constantly using his Transmogrifier to change himself into a dinosaur or an insect.)

When you transmogrify a banner, the text remains the same, but every other characteristic—shape, colors, and so on—changes automatically. Brøderbund has put quite a bit of effort into the Transmogrify feature; you can freeze and lock specific components of a banner as it cycles by, so that you retain individual layouts or shapes while the other components keep cycling.

You can also use Transmogrify as a screen saver. Just enter a message into BannerMania and set the program on Transmogrify to get an endless cycle of color banners relaying your message to anyone who stops by your computer.

No matter what your artistic ability, BannerMania enables you to generate truly elegant banners in a fraction of the time it would take with a typical illustration program. All in all, I heartily recommend BannerMania to anyone who needs to spread a message in a big way.—**Michael Dashe**

See Where to Buy for contact information.

★  
Organization Chart Software

## ORG PLUS FOR MACINTOSH 1.0

**Pros:** Customizable features; can resize charts to fit page. **Cons:** Options can be confusing; can't create tables or reports; supports only PICT graphics format. **Company:** Banner Blue. **Requires:** Mac Plus; second disk drive. **List price:** \$195.



No matter how large a corporation you're dealing with, Org Plus helps you visualize the corporate hierarchy. Now available on the Macintosh, this program has been available since 1986 for computers running MS-DOS. Org Plus enables you to make organization charts with thousands of boxes, establishing connecting lines and relationships automatically.

### Plenty of Bells and Whistles

You might think that creating an organization chart is no great problem. Just draw a box in a program like MacDraw II, duplicate the box a few times, drag the duplicated boxes into position, enter text, and add connecting lines. Simple, huh?

Even when the chart has only a few entries, it's not as easy as you might think. For a large chart, the logistics involved in getting it right with a drawing program can be mind-boggling. Org Plus provides the bells and whistles for handling any size group, makes adjustments automatically, and indicates almost any relationship between boxes.

The program begins by asking you what information you want in each box (up to 24 lines' worth): name followed by title, title followed by name, or a custom arrangement. (You can temporarily hide any sensitive data; for example, you might include salaries only on the chairman's copy of the chart.)

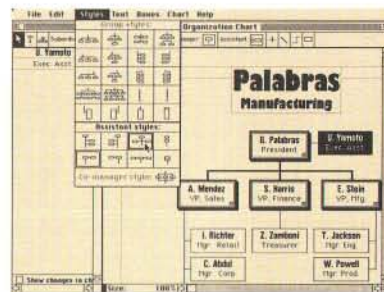
A box now appears at the top of the chart, in the format you've specified. You can add subordinate boxes to the side on the same level, side by side underneath, in a single column underneath, and so on (see "Editing a Chart"). You can select various line widths, appearance options, border styles, and any typeface installed on your System. You can even use a different font for each item in a box.

As you enter data, the box you're working on expands or contracts to display the text properly—no manual juggling required. You can either enter text directly into the boxes or speed up the process by using an edit panel to make the entries in bulk (the edit panel is shown at the left side of the "Editing a Chart" screen). Org Plus also helps you rearrange and resize the entire chart to save space.

In fact, there are so many features, that the excellent manual contains over 250 pages.

### Special Features

Text and drawing tools are provided for annotating charts. These annotations appear as a separate layer superimposed on the chart. Because they are handled independently when you shrink or enlarge a chart, the an-



**Editing a Chart** The resizable edit panel occupies the left side of this screen. A pull-down menu shows choices for placing boxes and lines to indicate relationships.

notations are not affected.

You can import graphics, such as a company logo, through the Clipboard, but in PICT format only; after you import images, you can resize them and drag them to new positions.

You can import the text from a database or word processing program, but only if the text is in tab-delimited ASCII format. Nevertheless, this capability can save many hours in creating a chart for a large organization. If the name of an employee's manager is included in a database, the program even maintains the reporting relationship.

You can cut and paste boxes between charts, separate large charts into several smaller ones, and merge several small charts into a single large one. You customize defaults such as the spacing between boxes. You can also save a series of chart formats to maintain a consistent appearance throughout the departments of a company.

### The Downside

Org Plus is so chock-full of features that it is hard to remember whether you access a particular function by pressing ⌘, Shift, or Option. Although most features adhere to the standard Mac interface, the program is not intuitive; you must read the manual and learn specific procedures.

You can't create automatic headers or footers for multipage charts, and there is no support for color. You can't create oval boxes, you can't shade boxes, nor can you place a background in them. And although the IBM version lets you create tables and reports, the Mac version doesn't. (continues)



## The Bottom Line

Despite these few shortcomings, Org Plus is a must-buy for companies that need to constantly create, update, and distribute organization charts. It has no direct competition on the Macintosh. Small organizations, however, might not use all of Org Plus's capabilities enough to warrant paying the \$195 asking price.—**Marvin Bryan**

See Where to Buy for contact information.



## Exercise/Ergonomics DA

### LIFEGUARD

**Pros:** Real help for repetitive strain injury; simple, elegant design and easy setup; highly user-configurable; useful ergonomics information. **Cons:** Some INIT conflicts.

**Company:** Visionary Software.

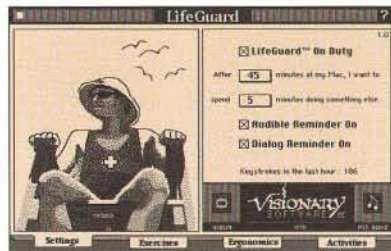
**Requires:** Mac Plus; System 6.0.2.

**List price:** \$39.95.



I've been waiting for a product like LifeGuard to come along. One of the first personal-computer programs—and apparently the first and only for the Mac—to take notice of the repetitive strain injury (RSI) and eye fatigue that are associated with long hours at the computer, this ingenious desk accessory politely interrupts you (at intervals you determine) and prompts you to take a break. The prompt can be a sound, a flashing menu-bar icon, and/or a dialog box that says it's time to stop working for a few minutes and do something else.

If you work at the Mac nonstop for hours, you risk RSI, which can be extremely painful and ultimately disabling. RSI comes in various forms; a common one is carpal tunnel syndrome, which affects the wrists and hands. In most cases RSI can be prevented or alleviated by taking fairly frequent, short breaks and doing simple exercises. But even if you know this, even if you've experienced the pain of RSI yourself, it's hard to remember to stop when you really get into what you're doing—which is why LifeGuard's reminders are such a help. Besides the user-configurable prompts, the program provides easily accessible, clear drawings and de-



**LifeGuard on Duty** Choose LifeGuard from the Apple menu, and the main settings window appears. The tabs at the bottom take you to the sections on exercises and ergonomics and to the activities window, where you tell LifeGuard what you want to be reminded to do on your break.

scriptions of gentle but effective exercises in seven groups: Whole Body, Eye, Neck, Shoulder, Back, Wrist, and Hand. LifeGuard also has diagrams and information on workstation ergonomics; the excellent manual offers more ergonomics information plus a bibliography.

### Settings, Snoozes, and Sounds

One of LifeGuard's virtues is that the main window, accessible from the Apple menu, is where you set the timing of interruptions and the duration of breaks. There's no clicking through a series of dialog boxes to change the settings. Another plus is that LifeGuard is smart—unlike an alarm-clock application, it doesn't just go off automatically at a certain time. If you take a break, LifeGuard knows—because it monitors key-strokes and mouse movements—and adjusts its timing accordingly, resetting itself when you start work again. So if you already take regular breaks from work, you may never hear from LifeGuard at all.

LifeGuard's snooze function—which works like the snooze bar on a clock radio—and sound function are accessible via icons in the main window. You pick the length of the snooze and set up any key combination to get a brief respite from LifeGuard's nagging.

As for the audible prompts, several of the sounds provided are charming, and a few are smarmy. I am not a fan of talking agents: when my computer intones "Relax" in the deep, smooth voice of a hypnotist, it is risking defenestration. I could do without the blissful Sigh, too, and the

heartfelt digitized "I love you." But you can discard the sounds you don't like and still have plenty of choices left. Morning Flute, African, and Tick-Ticka are my favorites; I experimented on my three office cube neighbors with these sounds turned down fairly low, and two of them never heard them at all (the third noticed Tick-Ticka and said she liked it). You can record new sounds with a digitizer such as Farallon's MacRecorder or directly on one of the new Macs, such as the LC, that come with a sound-input microphone.

LifeGuard is easy to install and has good context-sensitive help and expert tech support (in case you have a lot of other INITs loaded and encounter an INIT conflict, as I did—I used an INIT-management utility to fix the problem). LifeGuard is a straightforward program that fulfills its purpose admirably. It takes some of the drudgery, and potentially a lot of the pain, out of computer work.

—**Felicity O'Meara**

See Where to Buy for contact information.



## Editor's Online Reference

### EDITORIAL ADVISOR 1.0

**Pros:** Comprehensive; simple to use; customizable word lists and style sheets; clearly written. **Cons:** Some information too elementary, some too skimpy; navigational routes sometimes indirect. **Company:** Petroglyph.

**Requires:** Mac Plus; hard drive; System 6.0.5. Recommended: 2MB of RAM if operating under MultiFinder.

**List price:** \$149.95.



Editorial Advisor, a comprehensive online reference guide for editors and writers, will appeal most, I expect, to copy editors (a select breed, we like to think ourselves), who have a special curatorial responsibility for the grammatical correctness and stylistic consistency of the books and articles with which we work. It is a straightforward and useful package—free of diverting bells, whistles, or entertaining graphics. Its authors' goal was to assemble as (continues)

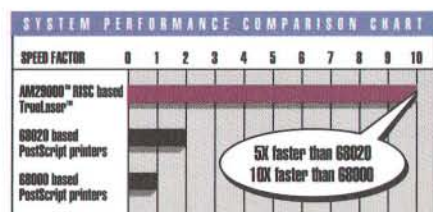


# Microtek Introduces the TrueLaser Printer. Breakthrough Technology at a Breakthrough Price.



## The New Price/Performance Printer Standard.

Microtek presents the TrueLaser™ printer. Powered by the AMD 29000, a 32-bit RISC processor that's five times faster than the 68020 found in most Postscript printers. And ten times faster than the 68000 found in PCL or PDL printers.



Right out of the box it gives you 2MB of memory. And it can be configured up to 6MB. It's both Adobe PostScript®™

and HP PCL compatible. Now that's unmatched power at an unmatched price.

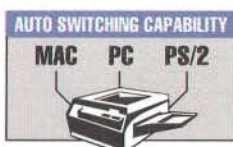
## The First Laser Printer with TrueImage and TrueType.

The TrueLaser printer is the first printer to ship with TrueImage technology. It includes a bundle of 35 resident TrueType fonts. You also have a printer that's ready for both Windows 3.1 and Macintosh System 7.0. You have absolutely WYSIWYG font display. Faster screen display. And faster printing. That's versatile enough to suit all types.



## The Best of Both Worlds. Postscript and TrueImage.

In addition to TrueImage, the TrueLaser printer will also work with every member of your Adobe font library. It beautifully publishes Adobe



PostScript®,™ Type 1 and Type 3 fonts. It also accepts and prints documents from Macintosh, IBM PC and PS/2

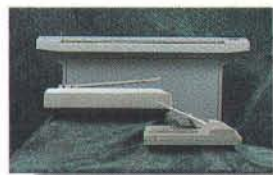
machines via AppleTalk, Centronics and RS-232 interfaces. It's unique autoswitching capability makes the entire process transparent and invisible. It's perfect as both a stand alone printer or a shared network resource. So join the future without leaving the past.

## All This for \$2695. Call Today.

At \$2695, you also receive a 1 year warranty with 6 month on-site service – a major breakthrough that you can't afford to miss.

Call 1-800-654-4160, or in California, 213-321-2121 for the name of the authorized Microtek dealer nearest you.

And get a first hand look at the only printer that does it all - for a lot less.



The TrueLaser printer comes from Microtek, the leader in innovative scanning products.

**MICROTEK**  
Better Images Through Innovation.

•Microtek Lab, Inc., 680 Knox Street, Torrance, CA 90502, (213) 321-2121 (800) 654-4160. •Microtek International Inc. No. 6 Industry East Road 3, Science-Based Industrial Park, Hsinchu Taiwan, 30077, R.O.C., 886-35-772155  
•Microtek Electronics Europe, GmbH, Schiefstraße 72, D-4000 Düsseldorf 11, F.R. Germany, 49-211-526070 • ©1990 Microtek Lab, Inc. All rights reserved. TrueLaser is a trademark of Microtek International, Inc. TrueImage, Windows and OS/2 are trademarks of Microsoft Corporation. TrueType, Macintosh and AppleTalk are trademarks of Apple Computer, Inc. IBM is a trademark of International Business Machines Corporation. PostScript is a trademark of Adobe Systems, Inc. Centronics is a trademark of Centronics Data Computer Corporation. All other trademarks or registered trademarks are the property of their respective holders.



complete a source on grammar, punctuation, usage, editorial conventions, and so on, as is possible in a relatively small amount of digital space (the program occupies a little under 2.5MB); and using HyperCard's system of buttons and links, to make all that information easily accessible.

Editorial Advisor actually comprises six HyperCard stacks, but because of the way they are linked, navigation among them is transparent. Although some familiarity with HyperCard is helpful to understanding the program's organization, it's not necessary; both the manual and the online help stack do an adequate job of explaining the hierarchy in the familiar terms of a genealogy.

All cards show the same row of 18 small icons running along the top. These include buttons for accessing help, performing a search, appending a note, entering items in the house style guide and word list, and placing and locating bookmarks, as well as moving around in the family tree. Directional arrows lead upward (to more general categories) and left or right (to related topics at a parallel, or sibling, level). One button takes you to the main Contents card, another to the subject index, yet another to the word index. There's also an Options button for which you can designate your chosen function, and one that leads backward through as many as 50 previously viewed cards. If you prefer pulldown menus to buttons for finding your way, they're available too.

### Search Me

Because there are many different ways to conceptualize how information may be linked and structured, it's often more efficient to find your reference by means of a search, rather than browsing. Both the word index and the subject index are written as hypertext; click on the boldface entry you want, and Editorial Advisor will take you to a card dealing with that topic. You can also use the Find button (the magnifying glass). Clicking on this button brings up a dialog box asking for the number of the card you want. Fortunately, since you're unlikely to know that number offhand, Option-clicking on the magnifying glass brings

up HyperCard's standard message box, ready for you to enter a search text string.

Editorial Advisor provides movable bookmarks so you can wander around the stacks and then return to set locations. Unfortunately, there are only two of them, unalterably labeled Bookmark 1 and Bookmark 2; you cannot rename them, say, Abbreviations and Pronoun Agreement. They're like the electronic equivalent of using your fingers to hold your page: if you forget that you've already set Bookmark 1 and assign it to a second spot, you lose the first place. These bookmarks are also temporary; once you exit the program, the settings are lost. It would be nice to be able to set a number of more permanent markers so you could flip easily to those topics you refer to often.

### Off-the-Shelf Info

Some parts of the reference section are quite strong, both in terms of the type of information provided and in the way it is presented. For example, click on the copyediting button, and you enter a stack of 15 cards beginning with a chart of copyediting marks. Clicking on any of these symbols brings up a card showing how that symbol is used to mark copy (see "Humpty Dumpty"). You can then move to a screen showing how the corrected copy would appear in print, or to a card explaining the symbol in more detail. Other routes lead to more thorough discussions of punctuation, including British and American variants on punctuation style. Where different conventions apply, such as the use or nonuse of the serial comma, Editorial Advisor indicates which standard references (*The Associated Press Stylebook* and *Libel Manual* or *Words into*

*Type*, for example) favor which style. An appendix includes an annotated list of related words such as *compose*, *comprise*, and *consist*, or *adapt* and *adopt*—even some less obvious pairs such as *blatant* and *flagrant*.

Sometimes the explanations proffered seem too elementary to be valuable. The editor or writer who needs to review the parts of speech would be well advised to consider another profession. At the same time, copy editors of good conscience and skill will differ as to what constitutes useful reference material. (I blush to admit how often I still struggle with hyphens and en dashes, which another editor might wield with ease.) Delve beyond the definition of pronoun into any of 13 subtopics for that one part of speech. Try case, for example. In addition to comparing subjective and objective cases, Editorial Advisor gives an interactive illustration for each person—I/me, he/him, they/them, and so on.

### Do It Yourself

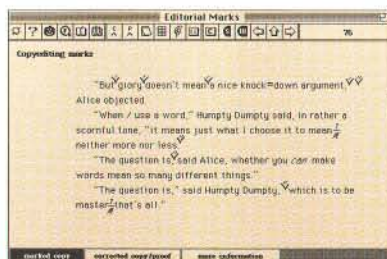
The program is strongest in articulating the general rules of grammar and usage. Interpretation, necessarily, is left to the user. Still, one could wish for more illustrations to help with making tricky judgment calls.

Editorial Advisor's other great strength lies in features for customizing the program. It provides a house style guide, style sheets (you can maintain as many as six at a time), and house word list—finally, a place to stow all those individual decisions. And you can append notes to any card, for example, to remind yourself or your networked colleagues when house style deviates from Editorial Advisor's.

As befits a program of its type, Editorial Advisor's text is well written, both the on-screen cards and the brief manual. Don't be too quick to throw out your *Chicago Manual of Style*, though—Editorial Advisor is not a replacement for it or any of the other standard source books from which the program draws. But consider keeping Editorial Advisor at hand. It's earned a place among your editorial references.

—Marjorie Baer

See Where to Buy for contact information.



**Humpty Dumpty** Clicking on the copyediting symbol for quotation mark insertion brings up this screen showing an example of marked copy.



# Tired Of Being Held Up By Shady Characters?



*Output from LaserWriterII NT, 300 dpi.*



*Output from LaserWriterII NT with Accel-a-Writer upgrade, 1200 x 300 dpi, 150 lpi with 26 gray levels*

Now you don't have to buy a new printer to get ultra-fast, high-resolution output. The Accel-a-Writer™ LaserWriter® Upgrade instantly converts any Apple® LaserWriter to a higher-speed, higher-quality laser printer. It's the next best thing to owning your own typesetter.

**Prints up to 20 times faster.** With Accel-a-Writer's high-speed RISC technology, you can output text, graphics and complicated halftones up to 20 times faster — without shady edges and jagged lines. Plus our 3-level Advanced Memory Management puts your printer to work preparing a second document while your first one's still printing.

**Works well with others.** Accel-a-Writer is fully compatible with Adobe's® PostScript® page description language. It comes with 2MB of memory and expands to hold up to 16MB. What's more, our ISI technology lets you print from PCs and Macs simultaneously, without additional hookups or switch-

ing. All models feature AppleTalk, serial, parallel\* and optional SCSI ports for maximum versatility.

**Rewards you for trade-ins.** Accel-a-Writer comes with a generous trade-in allowance that lets you lower your price even more when you send in the LaserWriter controller it replaces. And installation's simple. It just plugs inside your LaserWriter, with no special tools or service calls needed.

**Call toll free.** If you'd like to see how easy and affordable it is to upgrade your laser printer, call us toll free at 1-800-926-8839. We'll show you how to stop your laser printer from holding you up, and give you better resolution in the bargain.

\*Centronics® parallel interfaces not available for the original LaserWriter and LaserWriter Plus printers.



## Accel-a-Writer™

**XANTE**  
CORPORATION

©1991 XANTE Corporation. XANTE Accel-a-Writer is a trademark of XANTE Corporation. Other brands and product names are trademarks or registered trademarks of their respective holders. XANTE Corporation: 23800 Highway 98, Post Office Box 518, Montrose, AL 36559 USA, TEL: 205/990-8189.



★  
HyperCard Conversion Utility

## CONVERT IT 1.02

**Pros:** Efficient; good error handling; produces exceptional reports; first-rate support. **Cons:** ToolBook stacks require fine-tuning; external commands and functions need recoding.

**Company:** Heizer Software. **Requires:** Mac Plus; 2MB of RAM; HyperCard 1.2.5. Asymetrix ToolBook 1.0 requires IBM PC or compatible; 2MB of RAM; Windows 3.0. **List price:** \$199.

Last year Microsoft produced an impressive amount of media noise with its release of Windows 3.0, a semi-Mac-like operating system for IBM PCs and compatibles. At the same time Asymetrix, a Microsoft spin-off company, offered a product called ToolBook, a HyperCard-equivalent that works with Windows. Both firms hoped that these products together might help cure PC users of Mac envy; part of this hope was inspired by the belief that ToolBook would allow the rapid development of stacks (*books*, in ToolBook) for education, training, and other Mac-dominated areas.

**Into the Blue**

ConvertIt is a tool for automating the conversion of HyperCard stacks into ToolBook books. It was developed by the Hypermedia Group, a company that's been working with HyperCard since before you ever heard of it; ConvertIt is marketed by Heizer Software, known originally for templates and such for Microsoft Excel and Works. The Macintosh end of ConvertIt is a stack that runs under HyperCard, converting objects into HIFF format (for Hypermedia Interchange File Format), which the ConvertIt PC program translates into ToolBook. ConvertIt also translates HyperTalk scripts into ToolBook's OpenScript format at the same time, so buttons and other objects with attached scripts are functional in the ToolBook version of the stack.

The procedure itself is fairly straightforward. You open the ConvertIt stack from inside HyperCard and select a file or files to export (you

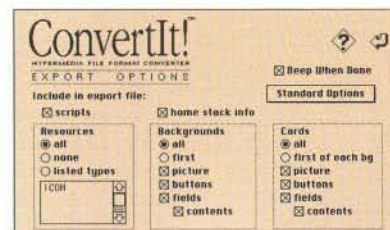
can pick a folder and check individual files to be converted). Before you export, you can also select elements of the stack to remain unconverted in the ToolBook target—for example, you might not want to export card graphics if you have some special color graphics planned for the PC book (see "Over We Go"). After you start exporting, ConvertIt chugs along at a rate of between 5K and 20K per minute (measured on a Mac IIcx); it's fastest at text and script conversion, and slowest on bitmaps.

You are left with a HIFF file, identified by the Finder as a MacWrite file type, that's typically 40 percent to 100 percent larger than the HyperCard original. You then transfer the file to PC format in one of three ways: direct serial-port link (the manual helpfully includes a cable wiring diagram), export over a network (copying into an AppleShare volume is most convenient), or Apple File Exchange direct-writing to MS-DOS format using an FDHD drive.

Finally, you open the HIFF file in ConvertIt's PC program. This requires selecting a few options (convert fonts or select default font, adjust size of bitmap bits for different PC graphics formats, import graphics or not), but otherwise it is a simple, automatic task. One of the most important features of ConvertIt is the conversion report book this process generates; ConvertIt lists, among other things, any errors it found in converting HyperTalk to OpenScript.

**Card Tricks**

The question about ConvertIt is basic: Does it actually work? Yes, it does, within the limitations imposed by the Windows and ToolBook environments. If a stack has been constructed entirely within HyperCard, practically everything converts smoothly. The resulting book in ToolBook can be a useful starting point for making an optimized PC version of the HyperCard stack; the fonts often look odd, unless you use Geneva exclusively on both the Mac and the PC, and the two systems' mismatched graphics (HyperCard uses bitmaps in a transparent layer while ToolBook uses *paint-Objects* that are part of the ToolBook *Page*) may mean that buttons in the



**Over We Go** The ConvertIt Export Options screen enables developers to select card elements and stack elements one at a time for conversion. This is necessary, not just convenient; if you're serious about developing in ToolBook you may want to replace some HyperCard constructs rather than merely translate them.

ToolBook book are obscured by converted graphics. XCMDs and XFCNs are not converted. The developers at Hypermedia at one point considered offering a library of the 20 most useful Mac XCMDs as objects usable by ToolBook through Windows' Dynamic Link Libraries, but concluded that programmers would probably be happier originating their own workarounds for XCMD correspondence. ToolBook's OpenScript is a more serious attempt at a general-purpose object-oriented programming language than HyperTalk is, with a range of facilities that allow impressive effects not easily produced in HyperCard. As a result, any developer working in ToolBook will want to use the converted files as a starting point rather than as a finished product.

**The Final Page**

ConvertIt does everything you could reasonably expect such a program to do—where the program declines to convert an element, you can assume that the Windows environment is to blame. ConvertIt provides reason to believe, furthermore, that Windows 3.0 presents Apple with a considerable marketing problem; despite sometimes scabbly-looking Windows fonts, most of the Apple sample stacks and *Macworld* SuperStacks contest stacks I converted looked fairly attractive in ToolBook. As a way to cut down on ToolBook programming time, or as an introduction to ToolBook functions for experienced HyperCard users, ConvertIt is one of the few authentic bargains in programming utilities.

—Charles Seiter

See *Where to Buy* for contact information.



# You Take Care Of Business.



Introducing the accounting software that does just what you need it to do.

Everything.

ACCPAC® accounting software was designed specifically



for businesses like yours—so you can spend less time balancing your books and more time

building your business.

No matter what you need to do—send an invoice, pay a bill, write a paycheck—ACCPAC provides a quick and simple way to do it. And it's so easy to learn you'll have it up and running in minutes.

At the same time, the ACCPAC family offers more advanced and comprehensive accounting packages that your company can easily upgrade to as your business grows.



*CA's Computing Architecture For The 90s protects and enhances the value of every CA software solution.*

That's why today, ACCPAC is the best-selling accounting software in the U.S. and Canada. All kinds of businesses in every type of industry trust their books to ACCPAC.

So should you.

Ask for ACCPAC BEDFORD® at your local software dealer or call 1-800-531-5236.

And then take care of business. ACCPAC will take care of your books.

**COMPUTER ASSOCIATES**  
Software superior by design.

# We'll Take Care Of Your Books.



## Application

MacWrite II

FileMaker Pro

MacDraw II

HyperCard 2.0

MacProject II 2.0

Claris CAD 2.0

SmartForm Series

MacPaint 2.0



## Story

# He hunts heads with a single piece of software.



Mike Giddings has the power to move the football. His ratings reports are studied by 12 NFL teams several times a year.

Chances are, that hot running back you see inserted into the line-up mid-season came from one of Mike's reports.

More than 5,000 players are rated using dozens of criteria. There are hundreds of thousands of pieces of information in all.

How does Mike handle all this? And publish dozens of reports a year? With a staff of three?

With a single piece of database software called FileMaker® Pro.

With it, he can analyze data to a remarkable

degree. FileMaker looks for certain attributes in a player's performance, weighs them, calculates performance, and displays the rankings in 200 different formats that Mike publishes for his clients. And he can do all this without computer expertise. He's a former coach, not a hacker.

Mike's reports give coaches an edge.

With FileMaker Pro, Mike has an edge, too.

*Mike Giddings is just one of over a quarter-million people who benefit from FileMaker. You can, too. To see how, call 1-800-729-2292, ext. 30.*

CLARIS®



# WINDOW SHOPPING

by Lawrence Stevens

*This month I look at a screen saver, a logic puzzle, financial software, and four other software packages.*

### After Dark 2.0

Keeping a monitor switched on while the computer is idle for too long can cause an image to be etched permanently on the screen. One way to prevent this is to install one of the many shareware or commercial screen savers that blank the screen after a period of inactivity. They usually display some kind of animation—shooting stars, bouncing balls—to let you know the computer is on.

After Dark 2.0 (\$39.95 from Berkeley Systems) now gives you the largest number of animations to choose from. Among the 30 modules are clocks (analog, digital, antique, and modern), flying toasters, worms, and a puzzle (see "Turning Your Screen Image into a Puzzle"). You can modify various elements (size, speed, and so on) of the animations and easily create your own designs by combining several modules into multimodules. The manual includes information for advanced users who want to use After Dark as a shell for creating their own animations.

The primary alternative to After



**Turning Your Screen Image into a Puzzle** While most screen savers blacken the screen, some of After Dark's displays, like this puzzle, distort the screen image. Because the display is constantly in motion (the pieces of the puzzle move around), the image cannot be etched onto the screen.



Dark in commercial screen savers is Pyro (from Fifth Generation Systems), which in the latest version provides seven options including a clock and fireworks. Because screen-savers, even good ones like Pyro, can get boring after a while, I recommend After Dark. Its variety of displays might make your day a bit more interesting.

### 3 In Three 1.0

**3 In Three (\$49.95 from Cinemaware)** is a set of about 60 challenging math, logic, spatial, and word skill puzzles with pleasant graphics and sound.

B's in Her Bonnet, a logic puzzle, involves a series of boxes with open or closed doors. Clicking on any box makes its door open and makes the doors on adjoining boxes open and close. You must select the boxes in the correct order so that all the doors stay open.

To complete other puzzles in the program, you unscramble letters or crack a code using arithmetic. The puzzles are fun but difficult. Sometimes it's even hard to understand the

rules. (The manual says, "if you aren't sure what to do, then figuring out what to do is part of the puzzle.") As a result, this package is for the serious puzzle fan who is willing to devote a good deal of time and sweat to it.

## Wouldn't You Rather Be Rich? and Financial Independence, As You Like It 2.0

This package includes the 300-page book *Wouldn't You Rather Be Rich?* and its accompanying software, Financial Independence, As You Like It (software and book for \$49.95, book only for \$13.95, from Cherokee Publishing Company).

This is not, as the book title suggests, a get-rich-quick program. Rather it is a comprehensive guide to all facets of financial planning, from food-shopping tips to Keogh plans. At the end of each chapter in the book there is a Progress Check, a relatively simple (usually five- or six-line) worksheet that helps you determine such things as your net worth, liquidity, and tax bracket. The software contains a computerized version of each chapter's Progress Check.

For many people, the book without the software would be the better buy. Most of the Progress Checks can be completed with just a pencil and calculator; with a spreadsheet program, you can replicate any of the Progress Checks in minutes. If you want to keep on top of your finances, the book can help, but the software is not necessary.

**EasyKana**

EasyKana (\$199 from HyperGlot Software) is a HyperCard stack that teaches the basics of the two main Japanese phonetic alphabets: katakana, used mostly for non-Japanese words, and hiragana.

(continues)



The software includes writing exercises that show, through animations, how to draw each character stroke by stroke. There are also drills in which you have to match Japanese characters with their English transliterations (such as *gi*). Each word card contains a Japanese word, the English translation, and a drawing that illustrates the word. You can also have the program vocalize the Japanese word. This vocalization, however, is the weakest aspect of EasyKana. Macintosh's drunken-sounding voice simply doesn't provide the accent and inflection accuracy you need when you are trying to learn a foreign language.

Learning to write Japanese characters is in itself a major accomplishment, and EasyKana is a great help, but if you're interested in learning to speak Japanese you should take a class or use a tape recording.

### FolderJump 1.1

FolderJump (\$49 from Cra Z Software) is one of those rare programs that do a relatively simple job but can make your Mac much easier to use. The biggest problem with the Mac's hierarchical file system is that you often have to click your way through multiple levels of folders in order to open or save a file. With the FolderJump INIT installed, the Mac's Save and Open dialog boxes include a pop-up menu with your most-used folders listed. When you select a folder from the dialog box, you immediately jump to that folder without going through the hierarchy. Also, any time you save or open a file, that file's folder appears on FolderJump's pop-up menu. You can reopen or close that folder by selecting its name from the menu at any time. These folders appear in the dialog box until you shut down the Mac.

When you move from one volume or drive to another using FolderJump's Open or Save dialog boxes, and later return to the original volume, you will find yourself in the same folder you were in before you left that volume or drive.

FolderJump can save you thousands of mouse clicks.

### Fractal Attraction 1.0

Iterated function systems (IFS) is a means of creating complex artwork



**Five Ways to Learn Japanese** Learning Japanese is not easy, but EasyKana provides five ways, represented by the five buttons, to learn the language. Writing provides animations that show how to write characters. Flash provides drills in which you match characters with English transliterations. Words helps you build a vocabulary; Worksheet allows you to print a practice sheet; and History displays a brief history of the language.



**Selecting Flash Cards** SmartCards lets you limit the cards displayed. You select up to 3 of the 30 parameters available in the window at the left of the screen. SmartCards will display only the cards that fit the parameters.

by placing thousands of dots at the coordinates of an equation as it is solved iteratively. The images can look like real-life objects such as trees, clouds, or dragons, or they can be abstractions.

Fractal Attraction (\$49.95 from Sandpiper Software) is a better program for nonmathematicians than IFS Explorer from Kohn Software is (see *Window Shopping*, March 1991) because it enables you to draw fractals without understanding the concepts behind them.

In both IFS Explorer and Fractal Attraction, you enter equations in a spreadsheetlike window, and the program generates a fractal based on that equation. Most equations result in interesting fractals, but in IFS Explorer, to find the equation for a specific figure, such as a leaf, you have to understand how fractals work or be willing to spend hours in trial and error. Fractal Attraction solves this difficulty by automatically entering equations based on scanned or drawn

images. You paste in an image, use a tool to trace its outline, and Fractal Attraction enters the equation that will result in a fractal that looks like the image.

If you want to use fractals in artwork but don't want to learn the mathematics behind them, Fractal Attraction is your best buy.

### SmartCards

SmartCards (\$25 from SmartCards Software) is the third HyperCard foreign-language flash-card program that I've looked at. The others were VocabuLearn/CE from Penton Overseas and MacFlash Cards from The Language Quest Software Company (see *Window Shopping*, May 1990 and June 1990).

All three of these programs share a number of characteristics. They all first display either an English or foreign word on one side of the screen. Then after you remember or guess the foreign or English equivalent, you click to see the correct answer.

The major differences between the three programs lie in the control you have in selecting your practice word cards. In this regard, SmartCards is better than its two rivals.

First, SmartCards lets you choose up to three parameters—such as noun, travel, business—for selecting practice cards (see "Selecting Flash Cards"). So you can, for example, practice with only cards that contain nouns and relate to food or business.

Second, SmartCards does a better job of sorting cards based on your correct or incorrect answers. For example, you can set the program to display any cards that have not been answered correctly a given number of times in a row. You can also sort the cards in descending order based on the percentage of incorrect answers. Or SmartCards can display only the cards you haven't seen for the longest period of time.

So far, the company makes stacks for French, Spanish, German, and Italian (Russian and Portuguese are in the works). If you're studying one of these languages, SmartCards' superior ability to manipulate cards can provide an effective way to learn vocabulary. **M**

See Where to Buy for contact information.



# Never before has so much been available to so many for so little.



Now that the new Macintosh® you've always wanted is finally within reach, you'll no doubt also want all the software you can get your hands on.

That would be Microsoft® Works.

Works comes with a word processor for reports, memos and letters.

There's also a spreadsheet for number-crunching and business graphics. A database for managing lists. Communications capabilities. And, of course, drawing

tools (after all, this is a Mac®).

Works is powerful, easy to learn and marvelously affordable. And now it comes with a free Small Business Success Kit—a \$120 value\*. For the dealer nearest you, call (800) 541-1261, Dept. P62.

Then go get that Mac. Get Microsoft Works. And get going.

**Microsoft®**  
Making it all make sense®

\*Based on suggested retail price of components if purchased separately. Offer void where prohibited by law. Not valid in conjunction with any other offer nor on academic version purchases. Offer valid only in the 50 United States. Offer good January 1-June 30, 1991. For information only: In the U.S., call (800) 541-1261, Dept. P62; in Canada, call (416) 568-3503. Outside North America, call (206) 936-8661. © 1991 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks and Making it all make sense is a trademark of Microsoft Corporation. Macintosh and Mac are registered trademarks of Apple Computer, Inc. "Small Business Success" is a registered trademark used with permission of the Goldhirsch Group, Inc.







# Take Your Macintosh to the Top with Performance Upgrades from **DAYSTAR**

D I G I T A L

## DayStar Cache Cards

This new generation of cache cards allows you to plug even more speed into the Mac IIci cache connector. From the proven FastCache IIci to the "blazing fast" 50 MHz PowerCache IIci, get the speed you need at the price you can afford. If you already have a FastCache, trade it in for big savings towards the PowerCache of your choice.

### FastCache IIci

This super fast 64K static RAM cache is the economical performance upgrade with response time up to 70% faster! .....\$279

### 40 MHz PowerCache

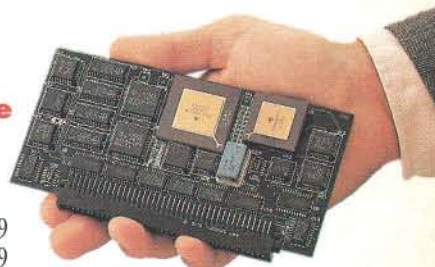
Get Macintosh IIcx processing speeds. Stay under budget and still fly like the wind.

Without Math Chip .....\$949  
With Math Chip .....\$1169

### 50 MHz PowerCache

This turbocharged 50 MHz cache card turns your computer into the fastest Mac alive.

Without Math Chip .....\$1689  
With Math Chip .....\$1999



Cache Cards for Mac IIci

## DayStar PowerCard 030

The PowerCard 030 delivers maximum speed at an affordable price. The on-board 32K RAM cache eliminates multiple processing wait-states; the 50 MHz configuration triples the performance of a Mac II!

If you start with a 25 or 40 MHz board, you can always upgrade to 50 MHz later. Optional 68882 math chip is available for spreadsheet recalcs, 3D and scientific applications.

**PowerBundle IIcx.** Some Mac IIcx's require that a socket be added to the motherboard. In this case CDA, in conjunction with DayStar, offers a unique motherboard exchange program. To eliminate down time, CDA will overnight you a new socketed IIcx motherboard and the PowerCard of your choice. Simply return your IIcx motherboard and install the new one. Please call CDA for additional details.

### 25 MHz PowerCard

This is an ideal low-cost, entry-level upgrade for your Mac II, IIx or IIcx.

Macintosh II, IIx, IIcx .....\$1099  
With Math Chip .....\$1249

### 40 MHz PowerCard

IIcx class performance at nearly half the cost of Apple's upgrade path.

Macintosh II, IIx, IIcx .....\$1389  
With Math Chip .....\$1599

### 50 MHz PowerCard

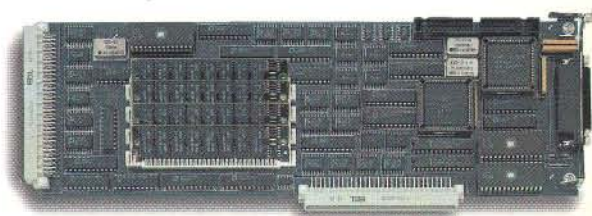
The fastest 68030 processing speed available for the Mac family.

Macintosh II, IIx, IIcx .....\$1899  
With Math Chip .....\$2199

PowerCard 030 for Mac II, IIx, IIcx

## DayStar SCSI PowerCard

Break the hard drive performance bottleneck with the SCSI PowerCard. This NuBus card gives all drives the ability to perform like super fast RAM disks, getting data to and from your applications at lightning fast speeds. Works with all standard drives, including opticals, SyQuest and CD-ROM. In fact, the SCSI PowerCard is so powerful that even slow opticals can perform faster than a WrenRunner II—the world's fastest drive. Database, graphics, or wherever you have disk intensive tasks or large files, this easy-to-install NuBus card is the ideal performance upgrade for Macintosh users. The buffer uses standard 100 nanosecond Mac II SIMMS (0 MB Cache/Buffer requires memory).



SCSI PowerCard for NuBus

### SCSI PowerCard

0 MB Cache/Buffer .....\$1099    4 MB Cache/Buffer .....\$1349    16 MB Cache/Buffer .....\$2169

*The Complete Line of DayStar Performance Upgrades are available through CDA Computer Sales!*

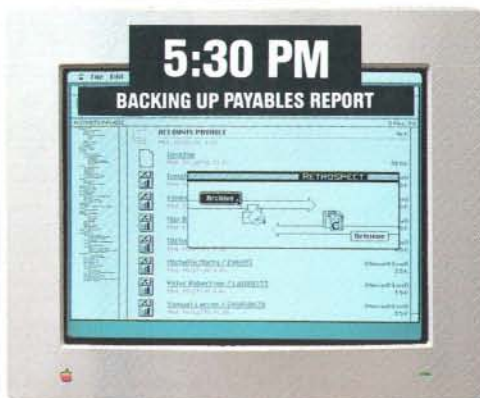
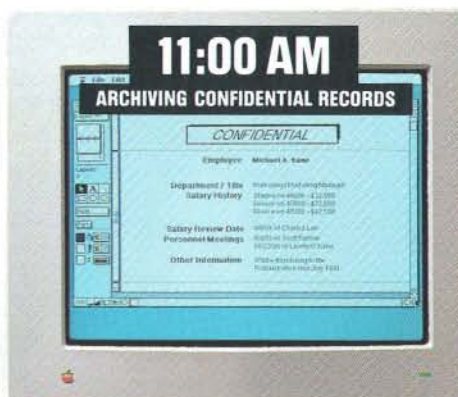
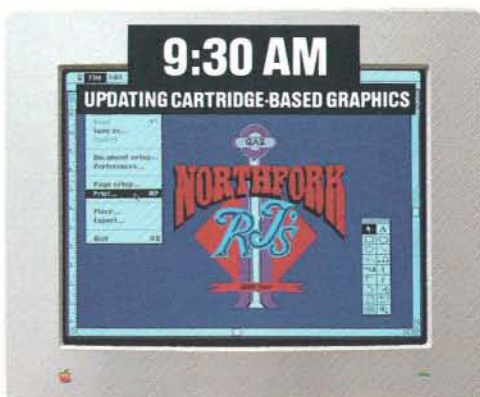
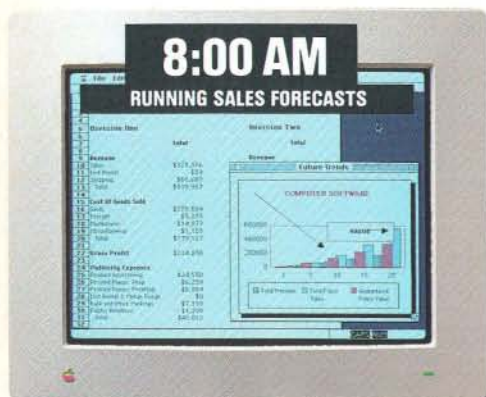
US/Canada  
800-526-5313

The Magic of Mac, The Power of People  
**CDA Computer Sales**

Ad# 28-05  
Outside US/NJ  
908-832-9004



# A Day In The Life Of



## MacinStor<sup>®</sup> Erasable Optical.



Imagine a storage device that runs at near-Winchester speed, has the capacity to accommodate massive databases, and the versatility to do not just one storage task, but a dozen.

The Eddy Award-winning MacinStor Erasable Optical is just such a device. A dynamic storage system that (1) provides infinite near-line storage capacity, (2) is the most reliable and convenient data backup and archiving solution, (3) lets you carry or send massive files, (4) functions perfectly as a primary storage device, (5) gives you lock-it-away data security, and (6) can immediately take over for a downed hard drive without missing a beat.



MacinStor Erasable Optical subsystems are multi-talented because they're multi-featured. These bootable, random access systems deliver instant access to files, and seek times as fast as 35 ms. They're AppleShare<sup>®</sup> and A/UX<sup>™</sup> compatible. And you get your choice of 650 MB or 1 GB cartridges, with a certified data life up to 25 years. What's more, you get the most comprehensive set of utilities software, including Retrospect<sup>®</sup>, the EDDY Award-winner for backup.

Day or night, as a great tool for productivity and a great device for data protection, MacinStor Erasable Optical is a very timely choice. For more information, call (408) 879-0300. Storage Dimensions, 2145 Hamilton Avenue, San Jose CA 95125.



### STORAGE DIMENSIONS





# NEW PRODUCTS

**Edited by Mary Margaret Lewis**

This section covers Macintosh products formally announced but not yet evaluated by Macworld. All prices are suggested retail. Please call vendors for information on availability.

## HARDWARE

### 16MB SIMMs

16MB composite SIMMs designed with industry-standard 30-pin construction and offer 70-nanosecond RAM access. These units appear to the operating system as standard 16MB increments. Contact Vendor for price. Newer Technology, 316/685-4904.

### The Bat

Input device consisting of two ergonomically designed seven-key keyboards that enable you to enter characters, words, phrases, and macros by pressing chordic key combinations. Each Bat keyboard has all the functions of the standard 101-key keyboard; the Bat keyboards can be joined together and used instead of a standard keyboard, or be attached to the sides of the standard keyboard and

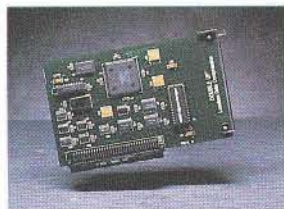


The Bat

used with it. \$269. Infogrip, 504/336-0033.

### DoubleUp

Lossless compression add-in board for mass storage. Comes bundled with Disk-Doubler 3.0 compression software. Uses a compression algorithm that compresses files whether they contain images, nonimage data, or application programs without data loss or transformation. \$229. Sigma Designs, 415/770-0100.



DoubleUp

### HD PortaDrives

Portable hard drives designed to provide average access time of 15 milliseconds. Drives measure 8 inches long, 6 inches wide, and 2 inches high. Operates with SCSI interface; has universal AC power supply with autoswitching for 100V to 260V power requirements. Available in 200MB and 100MB units. HD PortaDrive 200 \$1995; HD PortaDrive 100 \$1195. CD Technology, 408/432-8698.



HD PortaDrives

### ImageMaker

PostScript imagesetter designed to create commercial-print-quality images. Uses professional process-color screens and has features for automatic dot size adjustment, automatic film loading and punching, and the option of humidity and temperature controls in the unit. \$125,000. Purup North America, 612/646-3388.



ImageMaker

### Killy Classic Clip

Low-profile expansion bus connector designed to create an expansion slot for the Mac Classic so that it can support large-screen monitors, Ethernet connectivity, and accelerator boards. \$49.95. Killy Corporation, 212/995-0560.

### RGB VideoLink 1450AX

Autosync scan converter that transforms high-resolution computer graphics into television format. Automatically synchronizes to



RGB VideoLink 1450AX

any computer signal that has a horizontal scan rate from 21.5kHz to 80.0kHz. \$14,995. RGB Spectrum, 415/848-0180.

### Spectra Star 400 Printer Series

Series of PostScript-compatible color printers. Model 410 comes with 1MB of RAM, has built-in emulation of the Mitsubishi G370 printer, and can be used with host-based PostScript-compatible software. The 4MB Model 420 adds a variety of software packages that produce HPGL (Hewlett-Packard Graphics Language) output files. Model 430 adds a board based on the Intel 960 RISC processor and has 6MB of RAM plus AppleTalk connectivity; Model 450 adds a film recorder to create 35mm color slides. Model 410 \$5995; Model 420 \$6595; Model 430 \$7995; Model 450 \$14,995. General Parametrics, 415/524-3950.



Spectra Star 400 Printer Series

## SOFTWARE

### Berean Bible Search

Electronic concordance of the Bible that enables the user to do a keyword search on biblical texts; has a case-

(continues)





sensitive lookup feature, book-by-book counts of individual words, and topical indexes; and can perform word-combination searches using Boolean logic. Contains a text editor for notes, thoughts, and study outlines. 1MB min. memory. \$50. Kim David Software, 214/963-8673.

### The Best of TED 2

Compilation of presentations made by more than 25 expert technologists and artists who were speakers at the Technology Entertainment Design Confer-



The Best of TED 2

ence held in February 1990. Contains animation footage from Alan Kay's Vivarium project; Jaron Lanier demonstrating virtual reality; John Sculley demonstrating the Knowledge Navigator multimedia simulation; and other historic footage including Lyndon Johnson's "Daisy" commercial from the 1964 presidential campaign. 1MB min. memory. Set of 2 videodiscs with a HyperCard stack \$200; 3 VHS cassettes \$175. The Voyager Company, 213/451-1383, 800/446-2001, 800/443-2001 in California.

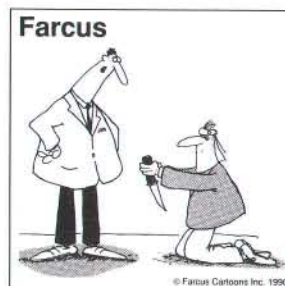
### EHelp

A context-sensitive hypertext engine for integration with Macintosh applications. Includes EHelp Compiler, EHelp Tester application, documentation, and examples. Includes license for single Macintosh appli-

cation. 128K min. memory. \$350. Endeavor Systems, 919/233-8818.

### Farcus, Business as Usual

Seven-disk set of 100 encapsulated PostScript cartoons accompanied by a book of camera-ready art. Cartoons were created by David Waiglass and Gordon Coulthart. All drawings can be imported into any page-layout program. 1MB min. memory. \$299. Farcus Cartoons, 613/235-5944.



Okay, okay. No more Japanese management seminars.

Farcus, Business as Usual

### Fine Art Impressions Art Library

Collection of 186 drawings in 17 different categories. Set comes on 14 disks and includes a template for positioning and altering images within page-layout and drawing programs, directions for designing a variety of layouts, and an image index. 1MB min. memory. \$179.95. Best Impressions, 805/984-9748.

### GrafEq

Applications for mathematics students in grades 10 through 12, and for first-year university students. Students enter any equation, in any form, and program graphs that equation. Algebraic, polynomial, trigonometric, radical, and hyperbolic trig functions are built in. Available only to schools and educational institutions. 512KE min.

# With the HP ScanJet Plus, you've

## The HP ScanJet Plus scanner provides 8-bit photographic-quality scanning.

That means 256 shades of gray for the hottest-looking output from your Mac. And it's so easy, too. At the click of a mouse, you can get negative or mirror images, as well as scaling in 1% increments from 4-200%. All for \$2,190\*, about what you would expect to pay for a 4-bit scanner.

So if you want the richest, most detailed images from your Mac, you've got it made with Hewlett-Packard. Call 1-800-752-0900, Ext. 1005 for your authorized HP dealer.



For all its amenities, ease of use, good image quality, and low price, *Publish!* recommends the HP ScanJet Plus as their "Best Buy."



**HEWLETT  
PACKARD**



memory. School site license \$200. Pedagogy Software, 604/638-8606.

#### **Hamlet**

Software that provides finance and profit information to help user decide whether to buy or lease an item. Takes into consideration factors such as alternative minimum tax, residuals, tax rates, debt, and discount rates. Includes break-even analysis on discount rate, rents, and other variables. 1MB min. memory. \$695. Decision Systems, 612/338-2585

#### **History on CD-ROM**

CD ROM that includes the full text of 107 books relating to U.S. history, as well as more than 1000 images, tables, maps, and photographs relating to historical events. Comes in leather bound case with compre-

hensive user manual. 1MB min. memory. Bureau of Electronic Publishing, 201/808-2700, 800/828-4766.

#### **HyperTax Tutor**

HyperCard application designed to act as a tax tutor. Gives line-by-line explanations of tax forms and tax-saving advice. Contains several illustrated examples of IRS forms and can be used as a support tool for people who are working with MacInTax and TurboTax software. 1MB min. memory. \$99. SoftStream International, 609/866-1187.

#### **JapanEase**

Series of HyperCard 2.0 stacks that use animation and sound to teach the Japanese katakana alphabet; words in the Japanese language borrowed from other languages; and other information, such as how

to tell time and dates and count numbers and yen in the Japanese system. 1MB min. memory. \$99.95. Qualitas Trading Company, 415/848-8080.

#### **Keyboard Pathology Series**

Set of three HyperCard modules designed to assist pathologists in classrooms and the lab. TextStack contains *Robbins Pathologic Basis of Disease* (W. B. Saunders, 1989); QuizBank includes more than 2400 questions covering all aspects of pathology; Video Index contains more than 1600 images taken from the University of Utah's Slice of Life videodisc produced by the university annually. Modules may be purchased separately or together. 1MB min. memory. Set \$480; single-user TextStack and QuizBank \$180; Video Index \$120; site li-

censes available. Keyboard Publishing, 215/275-2729.

#### **Kid Pix**

Children's color paint program that combines an assortment of creative paint tools with sound effects. Features a simple-to-use palette of paint, draw, and special-effects tools; a collection of magical erasers; and a talking alphabet. Each tool or brush has its own sound effect. Users can also record personal greetings or sounds to add to an image. 1MB min. memory. \$49.95. Brøderbund, 415/492-3200.

#### **MasterFinder**

Disk-management utility that's compatible with network software; allows user to copy, move, or launch files from any node on a network. Utility contains (continues)

# got it made in the shades.





an application- and document-launch feature as well as the ability to open documents that have been created by other applications; A/UX 2.0-compatible. 1MB min. memory. \$99. Tactic Software, 305/378-4110.

### Meeting Meter

HyperCard program that acts like a taxi meter for meetings. You enter the confidential salary information for each meeting participant; you have the option of entering related information such as room rental and other costs. The program displays a large meter showing hourly costs associated with the meeting. You can set meter to sound an alarm when the meeting goes over a preset cost limit. 1MB min. memory. \$29.95 plus \$4 s/h. Institute for Better Meetings, 415/857-1757.

### Octavo TypeChart

Program that enables you to print a personalized catalog of all the typefaces you have in your system. Enables you to print a font list showing FOND numbers, installed sizes, and resource types; print a specimen list with each font name set in its respective typeface. Program identifies FOND number conflicts. Enables you to make direct on-screen comparisons between fonts using TypeChart's screen-splitting feature. 1MB min. memory. \$89.95. Octavo Productions, 3623 Sunnycrest Drive, Ste. 800, North Vancouver, B.C., V7R 3C5, Canada.

### Performance Mentor 2.0

Software that acts as adviser on daily employee-management issues ranging from coaching and setting objectives to performance

feedback and appraisals.

Based on data culled from more than 300 research studies. Takes into account various current theories of management. All advice, tips, and hints may be printed. 1MB min. memory. \$395. Performance Mentor, 415/969-4500.

### Studio Vision

MIDI sequencer for recording and editing MIDI and digital audio information. Can record digital audio tracks in sync with MIDI sequence information; uses Digidesign's Sound Tools to record and play back 16-bit sound. Has 16 Audio Instruments to which digital audio tracks can be assigned, and allows independent control of pan and volume for each audio instrument. 5MB min. memory. \$995. Opcode Systems, 415/369-8131.

### Taste

Word processor with built-in desktop publishing capabilities such as page layout and multiple column. Lets you set left and right pages separately; enables matching and mirroring for left or right; and includes a layout box that lets you control the columns, the margins, and the range of pages you are working with. Has commands for wrapping text around irregular- and regular-shaped images. Lets you import PICT and EPS files. Includes the Delta-Graph drawing package, address book database, and point-and-click mail-merge facility. 1MB min. memory. \$149. DeltaPoint, 408/648-4000.

### TrustMaker

Application designed to help you prepare your own legally valid living trust

# With the HP DeskWriter, you can

**The Paradise Times**  
VOL. III SPRING, 1990 WANDERING TOURS LTD.

For the traveler craving the tropical essence of the Yucatan as well as a dash of the good life, Akumal is the place. It's not the luxury class of Cancun, but it beats the pants off most other small resorts along the coast.

Akumal prides herself on the conspicuous absence of telephones, TV's or bustling activity.

Folks, this town is laid back. It offers a good selection of hotels, dining and activities to soothe frazzled city nerves.

A large barrier reef runs parallel to the Quintana Roo coast, protecting the lagoon from the open sea. Basically it creates a gigantic underwater playground, chock-full of Caribbean underwater goodies which attract divers from all over the world.

For the archaeology buffs out there, Akumal is 15 km from Tulum. For the rest of us that means it's close to one of the few walled Mayan ruins. Xelha is another 5 km, and even the amateurs among us will want to slip into masks, snorkels and fins to check out this natural underwater aquarium.

In Mayan lingo, Akumal means "Place of the Turtle" not because it's so laid back, but because giant green turtles have come ashore since the dinosaur days to lay their eggs in the warm sands of the Caribbean.

Surrounding Akumal are lush jungles and thick coconut groves. Bright red bromeliads bloom high in the trees during early spring, sustaining themselves on rain, dew and humidity. While checking out bromeliads, you will probably see it's cousin, the orchid.

Along the porous sand of the Akumal beaches, you'll find lots of really neat stuff: conch shells, lacy red seaweed, coconuts sprouted after soaking in the sea for months, and crabs of all sizes and colors.

**This month's featured destination:**  
**Akumal**

Relax amidst the long stretches of wind bent coconut trees which set off the blazing white sands of Akumal's sweeping beaches.



without an attorney. Program guides you through the trust-making process and lets you make up to 28 specific gifts of trust property to any individual or group of people; provide for minor beneficiaries by leaving property in trust or by using the Uniform Transfers to Minors Act; appoint an initial trustee, a successor trustee, and an alternate successor trustee; and print a schedule listing the property to be transferred to the trust. 512K min. memory. \$99. Legisoft, 408/244-3300.

### The Viper

Data security utility that erases hard and floppy disks by overwriting the data multiple times according to guidelines from the National Security Agency. Once erased in this manner, data can't be accessed

by retrieval programs. 1MB min. memory. \$49.95. Systematic Computer Services, 513/275-2937.

### Wayne Gretzky Hockey

Hockey-simulation program that includes animated referee calls, digitized sound effects and video fight sequences, and the ability to create and edit your own team roster. Lets one or two players control any team member in real time, play and coach simultaneously, coach from the bench, or watch the computer control both



Wayne Gretzky Hockey

teams. Includes a playback feature that lets you study game play using variable-speed instant-replay and slow-motion feature. Rates players according to 11 skill categories and tracks their performance. 1MB min. memory. \$54.95. Bethesda Softworks, 301/926-8300.

### ACCESSORIES

#### Anchor Pad for Macintosh

Accessory designed to keep the Mac anchored to a desktop without marring the desk's surface. Available in a 10-by-12-inch footprint for the Plus, SE, and Classic and a 14-by-16-inch footprint for the Mac II series and LC. Consists of a baseplate that connects to an adhesive pad and bolts into footings installed at the bottom of the Mac. Lock and key provided to secure the Mac to the baseplate.

Installation required. \$110 and up, depending on configuration. Anchor Pad International, 805/658-2661, 800/426-2467, 800/626-2467 in California.



Anchor Pad for Macintosh

#### Dust Covers

Customized dustcovers for Mac Classic, LC, and Hsi. Made of a washable cotton-polyester-blend fabric; available in gray, red, royal blue, brown, navy, and tan. (continues)

# have it all. (But keep it to yourself.)



## The HP DeskWriter printer puts laser-quality printing right at your fingertips.

With a small size and a \$995\* price tag, the DeskWriter printer easily fits on your desk and in your budget. And its advanced 300 dpi inkjet technology lets you print sparkling text and detailed graphics.

The DeskWriter is also designed for easy use with your Macintosh, and has both serial and AppleTalk interfaces. It even includes scalable and outline fonts. Combine that with the DeskWriter's whisper-quiet operation, and keeping it to yourself will be that much easier. So call 1-800-752-0900, Ext. 1004 for your authorized HP dealer.







Set of covers for CPU, monitor, and keyboard \$29.95; mouse cover \$2. Co-Du-Co, 414/476-1584.



Dust Covers

### Keyboard SpaceSaver II

A combination monitor platform-keyboard storage rack with a drawer for supplies. Designed to help computer users create more desktop space while protecting keyboards from dust, spills, and debris. Keyboard storage rack slides under a desk when not in use; fits any size keyboard. \$59.95. Curtis Manufacturing, 603/532-4123.

### Scan Align

Accessory for hand-held scanners that enables you to exactly align scanner with image during scanning process. Guide provides a built-in acetate sheet, under which you place original image for scanning. \$39.95. American Business Concepts, 214/904-9121.

## BOOKS

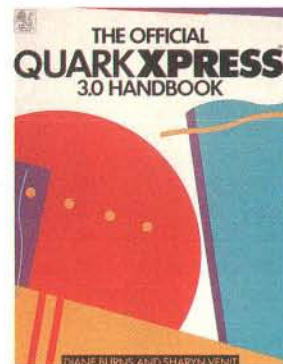
### Wouldn't You Rather Be Rich?

Step-by-step guide to managing money with the goal of achieving financial security. Provides specific advice and guidelines for organizing finances in several aspects of life such as deciding to buy or lease a car; life and health insurance; investment options; income taxes; divorce; alimony; and child support. Written by Clyde Albert Paisley. Soft-

ware re-creates the book's end-of-chapter Progress Checks and analyzes the data entered to evaluate your financial status. 1MB min. memory. Book only \$13.95, book with software \$49.95. Cherokee Publishing, 404/424-6210.

### The Official QuarkXPress 3.0 Handbook

A how-to book for users of QuarkXPress 3.0 page-



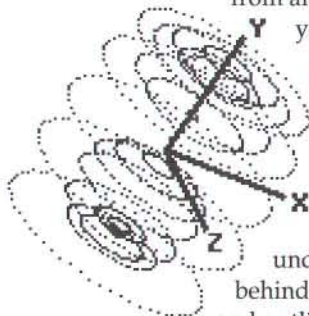
The Official QuarkXPress 3.0 Handbook

layout software. The book contains 250 illustrations and 8 color pages. Provides an overview of tools and commands that are available in QuarkXPress, and illustrates how to use them to achieve specific results and effects. Also provides tips and tricks, tutorials, and advanced techniques; makes use of case studies to illustrate points. Written by Diane Burns and Sharyn Venit. \$24.95. Bantam Books, 212/765-6500. **M**

.....  
To have your product considered for inclusion in New Products, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, and phone number (and two copies of the software) to New Products Editor, *Macworld*, 501 Second St., San Francisco, CA 94107. *Macworld* reserves the right to edit all product announcements.

# Picture this:

A program that allows you to graphically depict your data in a three-dimensional space, rotate and view it from any angle. One that gives you the ability to identify a point in a scattergram simply by clicking on it. And lets you use color and animation to represent higher dimensions. MacSpin™ helps you understand the meaning behind the patterns, associations, and outliers in your data.



## MacSpin 3.0

The only Eddy Award-winning Exploratory Data Analysis program. Now from Abacus Concepts.

For more information, please call 1-800-666-STAT, ext. 99.

**ABACUS**  
CONCEPTS

1984 Bonita Avenue  
Berkeley, CA 94704  
(415) 540-1949

© 1991 Abacus Concepts, Inc. MacSpin is a trademark of Abacus Concepts, Inc. All other brands are trademarks or registered trademarks of their respective holders.

# Remember when computers were going to change the world?

**Homelessness. Child abuse. Environmental disaster.** Through CompuMentor, people who know how to solve computer problems are matched up with resourceful, exciting organizations working to solve human problems.

In the last two years, we've put computers to work for more than 200 non-profits in the San Francisco Bay Area. Now it's

possible for you to replicate this miracle in your own area.

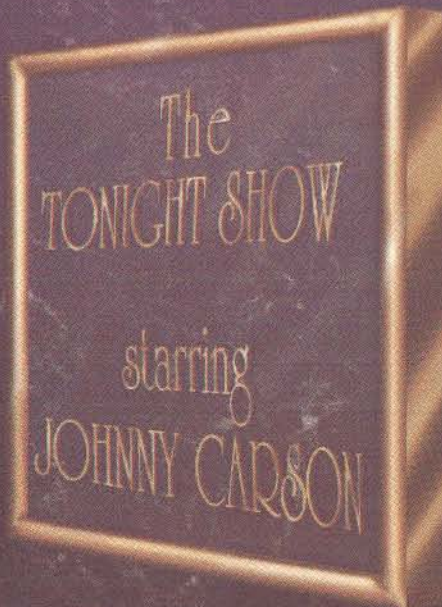
For your free start-up kit, just write or call our director, Daniel Ben-Horin. Individual and corporate support is also welcome.

Together, we can make sure computers keep their promise.

**CompuMentor**  
(415) 255-6040 385 8th Street, Second Floor, San Francisco, California 94103



"Truevision NuVista<sup>®</sup>  
brings you ultimate creativity  
at a reasonable cost."



Graphic created using the NuVista board with ColorStudio.<sup>™</sup>

The Post Group uses a Truevision NuVista video card to capture their ideas and shape them into high quality productions. The same power can transform your Mac<sup>®</sup> II into a broadcast-quality video production system.

And now with advanced features like chroma-keying and enhanced video overlay on the Truevision NuVista+, it's easy for you to communicate in ways more exciting than ever before.

For as little as \$2,995, the Truevision NuVista+ provides everything you need to convince your audience with a creative, professional product.



7340 Shadeland Station, Indianapolis, IN 46256  
INTERNATIONAL: Canada 416/940-8727 France 33-1-3-952-6253 Italy 39-2-242-4551  
U.K. 44-628-77-7800 West Germany 49-89-612-0010 Other international 617/229-6900

ColorStudio is a trademark of Esselte Pandaflex Corporation in the United States, of Letraset Canada Limited in Canada and of Esselte Letraset Limited elsewhere. Macintosh<sup>®</sup> is a registered trademark of Apple Computer, Inc.



Linda Rheinstein  
The Post Group  
Los Angeles,  
California

"Advanced graphics on the desktop is here. You can't ignore it. And you shouldn't. The benefit is more power to create."

Call  
800-858-TRUE  
For more information

©1991, Truevision, Inc.

Circle 28 on reader service card



# Where In The World



**MACWORLD EXPO/VIENNA**  
Growth in number of Macintosh computers purchased in Austria during 1990: 62%



**MACWORLD EXPO/HELSINKI**  
Growth in number of Macintosh computers purchased in Finland during 1990: 67%



**MACWORLD EXPO/ASIA**  
Growth in number of Macintosh computers purchased in Hong Kong during 1990: 37%



**MACWORLD EXPO/EUROPE**  
Growth in number of Macintosh computers purchased in The Netherlands during 1990: 56%



**MACWORLD EXPO/BERLIN**  
Growth in number of Macintosh computers purchased in Germany during 1990: 66%



**MACWORLD EXPO/NEW ZEALAND**  
Growth in number of Macintosh computers purchased in New Zealand during 1990: 38%

The Macintosh market continues to explode. And MACWORLD Expo is growing right along with it.

According to International Data Corporation, the installed base of Macintosh computers has skyrocketed 800% to 4.4 million units since 1985. And that number is expected to almost triple by 1994.\*

At the same time, MACWORLD Expo has gone from a single show in 1985 to 17 international expos today.

The fact is, no matter where in the world you find computer users, you'll find

MACWORLD Expo—from Auckland to Amsterdam, Sydney to San Francisco, Toronto to Tokyo, Boston to Birmingham.

MACWORLD Expo brings together the people and the companies who are

going places. Some come to share tips and techniques.

Others to exchange

ideas and innovations. Everyone to see, touch, try, and buy the latest in Macintosh products and services.

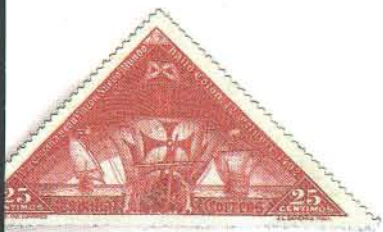
For information about exhibiting at the most successful trade show series in the world, please complete the attached coupon

## Everywhere.

\* SOURCE: International Data Corporation, August 1990.



# Is Macworld Expo?



**MACWORLD EXPO/BARCELONA**  
Growth in number of Macintosh computers purchased in Spain during 1990: 94%



**MACWORLD EXPO/FRANCE**  
Growth in number of Macintosh computers purchased in France during 1990: 73%



**MACWORLD EXPO/STOCKHOLM**  
Growth in number of Macintosh computers purchased in Sweden during 1990: 73%



**MACWORLD EXPO/TOKYO**  
Growth in number of Macintosh computers purchased in Japan during 1990: 36%



**MACWORLD EXPO/AUSTRALIA**  
Growth in number of Macintosh computers purchased in Australia during 1990: 22%



**MACWORLD EXPO/BIRMINGHAM**  
Growth in number of Macintosh computers purchased in the U.K. during 1990: 53%

and mail it to: **MACWORLD Expo**, c/o World Expo Corporation, P.O. Box 9107, 111 Speen Street, Framingham, MA 01701.

Can't wait? Fax it to us at 508-875-1573.

Don't miss out on this opportunity to exhibit at **MACWORLD Expo**—the original Macintosh computer show. It's everywhere.



## We'll send you a world of information.

☐ I'd like to know more about *exhibiting* at the **MACWORLD Expos** checked below.

☐ I'd like to know more about *attending* the **MACWORLD Expos** checked below.

- |                                     |                                        |                                           |
|-------------------------------------|----------------------------------------|-------------------------------------------|
| <input type="checkbox"/> Amsterdam  | <input type="checkbox"/> Helsinki      | <input type="checkbox"/> Sydney           |
| <input type="checkbox"/> Auckland   | <input type="checkbox"/> Hong Kong     | <input type="checkbox"/> Tokyo            |
| <input type="checkbox"/> Barcelona  | <input type="checkbox"/> Paris         | <input type="checkbox"/> Toronto          |
| <input type="checkbox"/> Berlin     | <input type="checkbox"/> San Francisco | <input type="checkbox"/> Vienna           |
| <input type="checkbox"/> Birmingham | <input type="checkbox"/> Singapore     | <input type="checkbox"/> Washington, D.C. |
| <input type="checkbox"/> Boston     | <input type="checkbox"/> Stockholm     |                                           |

All **MACWORLD Expos** are independent trade shows produced by World Expo Corporation, an International Data Group company, the world's leader in information services on information technology. Macintosh and Mac are trademarks of Apple Computer, Inc.

**MACWORLD  
EXPOSITION**

NAME \_\_\_\_\_

TITLE \_\_\_\_\_

ORGANIZATION \_\_\_\_\_

STREET \_\_\_\_\_

CITY/TOWN \_\_\_\_\_ STATE/PROVINCE \_\_\_\_\_

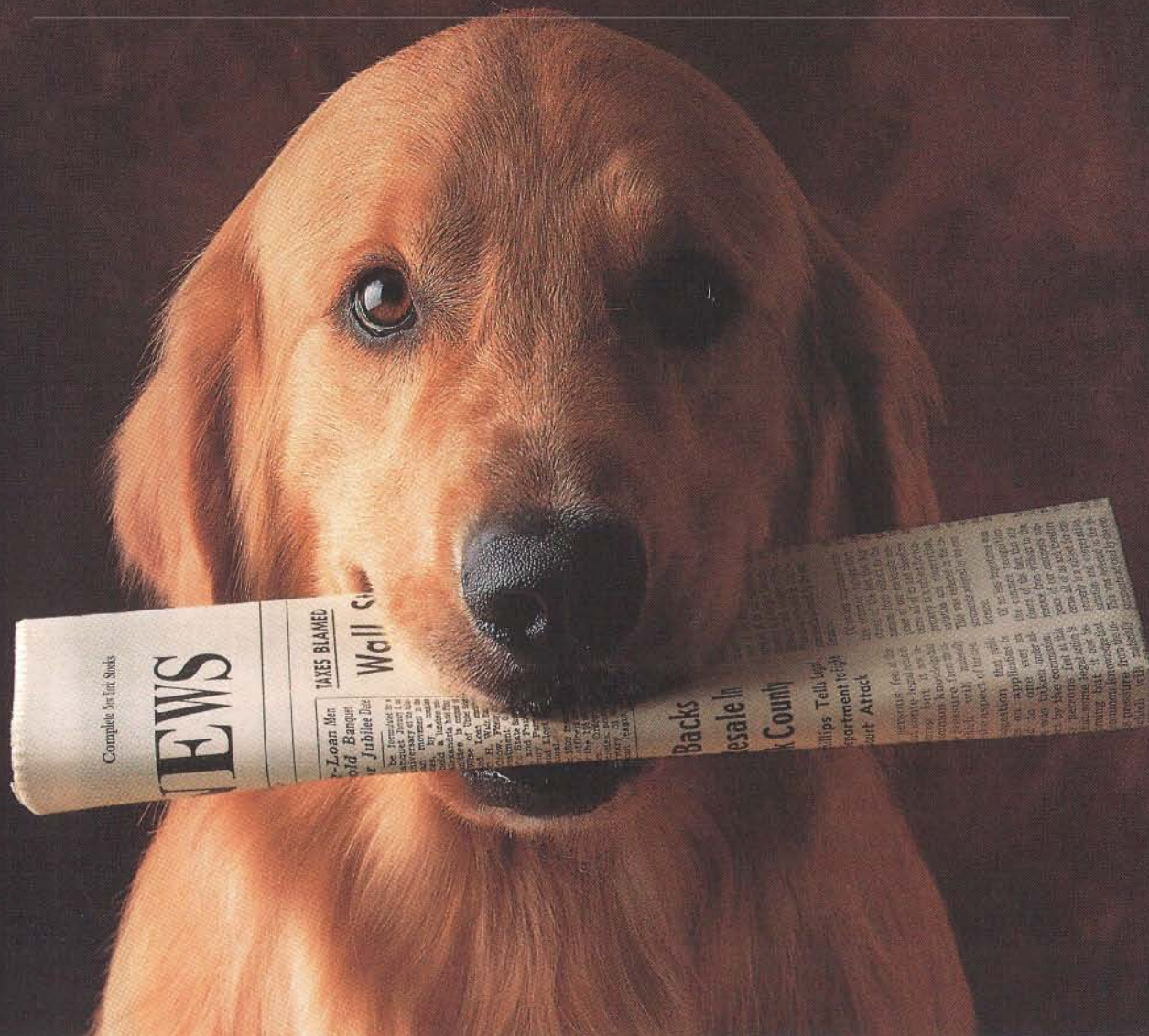
POSTAL CODE/ZIP \_\_\_\_\_ COUNTRY \_\_\_\_\_

TELEPHONE \_\_\_\_\_ FAX \_\_\_\_\_

MWMG91



# Our new mail system is just as convenient. And almost as friendly.



Microsoft® Mail version 3.0 brings you everything you need in an electronic mail system.



Microsoft Mail version 3.0  
for AppleTalk® networks.

For openers, now you can easily build your own personal address book and distribution lists. Afterwards, Mail automatically updates them for you.

You can also send mail with as many files attached as you want. You efficient types can even attach an entire folder of stuff. Just point and click and you're done.

There's even click and drag foldering. Which gives you a better, more intuitive way to store

and retrieve messages. As well as making it a lot simpler to keep all of your mail organized.

Best of all, Mail lets you send and receive files when you're right in the middle of something else. Like Aldus® PageMaker® or Microsoft Excel or Word. This means you don't have to save-and-quit-and-stop-and-start anymore.

To unleash Microsoft Mail 3.0 in your own office, call (800) 541-1261, Department P20. We'll fetch you a working model for only \$9.95.

**Microsoft®**  
Making it all make sense®

Working model is \$9.95, plus applicable sales tax. Offer good while supplies last and only in the 50 United States. In the U.S., call (800) 541-1261, Dept. P20. For information only: In Canada, call (416) 673-7638; outside the U.S. and Canada, call (206) 936-8661. © 1991 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks and Making it all make sense is a trademark of Microsoft Corporation. AppleTalk is a registered trademark of Apple Computer, Inc. Aldus and PageMaker are registered trademarks of Aldus Corporation.



# Quick Tips

VIRTUAL MEMORY UPGRADES, TABLE SHADING, LONG ADB CABLES, AND MORE

S

BY LON POOLE

Several months ago Evan M. London, a school-teacher in Hastings On Hudson, New York, submitted a tip that appeared in the January 1991 issue. His fourth-grade students appreciated how he applied what he'd learned to the real world, but

the fact that he was getting paid for his tip really impressed them. So much so that two of his students, Kristin Capeono and Julia DiSalvo, sent in a tip of their own.

"We play games, make stacks, and paint pictures on our fourth-grade teacher's Mac computer. We have figured out a trick for GunShy. You press the Option and ⌘ keys, and you will see the squares that can be eliminated. Those squares will be black and the others will be regular white. That's a way to find matches. Otherwise it is pretty hard."

Because GunShy is a HyperCard game, their tip applies to many other HyperCard games and to other HyperCard stacks as well. When you press the Option and ⌘ keys, HyperCard shows you the whereabouts of all buttons. Hidden buttons are often important hot spots in HyperCard games. In other stacks you can't always tell what words or pictures to click; this trick clues you in. A similar trick, which may be less useful in games, is pressing ⌘-Shift-Option to reveal all text fields. Text in fields can be searched using HyperCard's Find command (Go menu), but not text that's been made part of the picture.

## Partly Bad Disks

Two of us recently lost large, important documents, getting messages that said, "... unable to

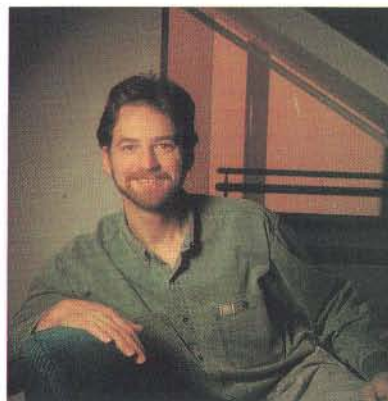
write... due to bad media..." I figured that was because I recently purchased blank disks at bargain rates. A co-worker tells me his IBM PC scans new disks during initial formatting to locate bad sectors and then forbids the use of the bad sectors. Does the Mac do that? If not, can I buy software that will? Our lab and office are terrified of another such loss.

Larry Horstman  
Miami, Florida

The Mac won't initialize (format) bad sectors on any disk. On a hard disk, it marks bad sectors as unusable. If the Mac finds a bad sector while initializing a floppy, however, it rejects the whole floppy.

What happened to you on the Mac could just as easily happen on any computer. Your disks developed bad sectors during everyday use. In other words, they wore out (prematurely). Good-quality disks take years to develop bad sectors. You can find and mark bad sectors that develop with age by using a disk utility program such as Central Point Software's MacTools Deluxe. However, I recommend you replace floppies that go bad. It's simply not worth the bother of limping along with them.

As you're probably aware by now, the only sure protection against disk failure is to regularly make backup copies of all information you can't



stand losing. Without current backups, you must live in terror.

## Icon Change

After reading *Quick Tips* in the January 1991 issue, I tried rebuilding my desktop. I had no problem rebuilding, and it improved file copy times greatly. After rebuilding my desktop, I opened the StuffIt Deluxe folder, and to my surprise the icon had changed. Could rebuilding have caused this?

Chris Ptacek  
Bellmore, New York

Yes. Before rebuilding, you must have upgraded from StuffIt 1.5.1 to StuffIt Deluxe. When you copied StuffIt Deluxe to your disk, the Finder checked its database in the invisible Desktop file to see if it already knew the program's icon. But the Finder doesn't compare program icons, it compares four-letter signatures of the programs. The two versions of StuffIt have the same signature, so the Finder didn't update the icon. The only way to remove old icons is to rebuild the (continues)



# How to recycle your Macworld Magazine.



## Pass it on.

Protecting the environment is one of the most important issues facing the 1990's.

The Macworld Earth Conservancy, developed by Macworld employees, continually explores ways to conserve our resources.

We've instituted conservation measures and a comprehensive recycling program.

Our concern for the environment has directly affected the production of Macworld Magazine.

We are continually exploring alternatives to our printing process and the latest breakthroughs in printing inks and recycled paper.

But until the tools are in place to recycle old Macworlds into new ones, we have a suggestion.

*You* can recycle Macworld yourself by passing your issue along to a friend or co-worker.

Or donate your Macworld to a school or computer center.

Any of these ideas will help minimize the waste of our resources and give us hope for the future.

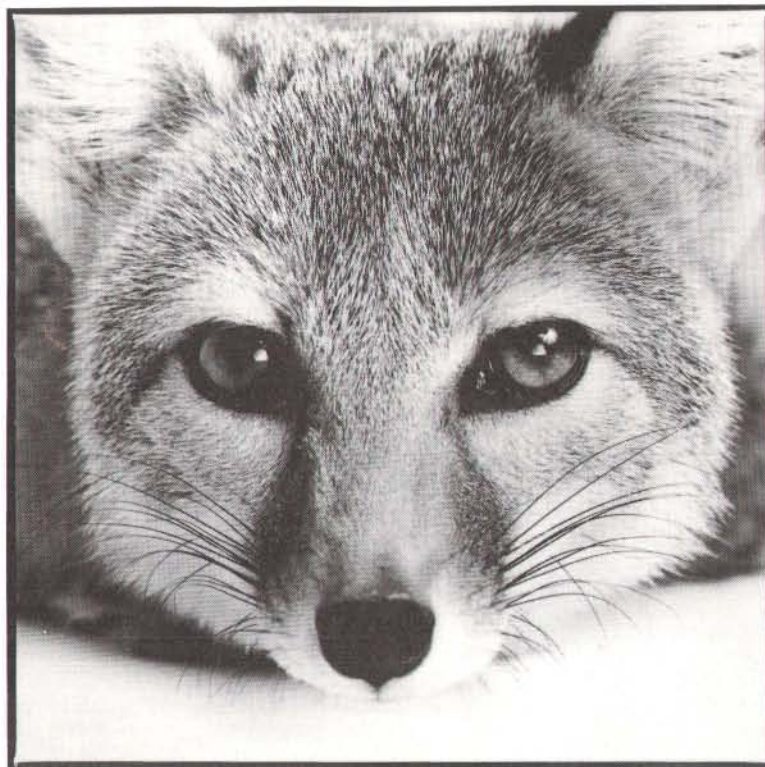
**MACWORLD**



**EARTH  
CONSERVANCY**



# NOW DISAPPEARING AT A LOCATION NEAR YOU.



Susan Middleton © 1987. All Rights Reserved.

The fact is, it's already too late to save at least 48 California plants and animals.

It's not too late, however, for another 800 that are on the brink of extinction.

From the diminutive kit fox (pictured above) to the majestic desert bighorn sheep, there's still time...but only if we act now.

Since 1959, the California Nature Conservancy has saved 277,000 acres of wild land. And it's been done by using a novel approach—we've bought it.

You see, our philosophy is to use the money we receive to buy land and therefore save valuable, irreplaceable plant and animal life.

We can't do it alone. Please help us by sending a tax-deductible contribution to The Nature Conservancy at 785 Market St., San Francisco, California 94103 or call 800-582-2273 for more information. You'll be saving some of California's most important resources.

Remember, the loss of another species is a loss for all generations who follow us.



*To Protect and Preserve*



QUICK TIPS  
HOW TO

Desktop file. Then the Finder erases its signature-icon database and compiles a new one based on the programs actually on the disk at the time.

#### Home Work

**Q** I am a schoolteacher nine years from retirement and have read a great deal about the increasing opportunities to work part-time at home using computers. I own a Mac SE and an ImageWriter II, and I'm pretty experienced with Microsoft Word, Excel, Works, and HyperCard. I have no idea what types of companies need such experience, and I would appreciate advice about whom I might contact for more information.

John A. Betterly  
Troy, New York

**A** Most people who work at home are consultants with specific skills to market—desktop publishing, programming, HyperCard stack development, word processing, graphic arts, and so on. All types and sizes of busi-

nesses and government agencies contract with free-lancers for these kinds of work. You get your first clients by putting the word out through friends and acquaintances, advertising in local papers, distributing brochures, showing a portfolio, making cold calls in person or on the phone, or using other methods appropriate to your type of skill. Some user groups keep referral lists to which you can add your name and skills. (To find the user groups near you, call Apple's clearinghouse at 800/538-9696.) Once you get a few clients, finding more is much easier: you have references, and the first clients may refer others to you. Pick one or two types of work you'd like to do with your Mac and start beating the bushes.

#### Upgrading for Virtual Memory

**Q** With the impending release of System 7.0, those of us who want to use virtual memory on our Mac Pluses and SEs face critical and costly decisions. Should we upgrade our

#### IMPORTANT PEOPLE

##### Name

Achilles de la Cruz

Babe Rothschild

Fidel F. Flat

Buck O. Racine

Venus Crooke

Plato Greenfield

Cleopatra Kelly

**FANCY TABLE DECORATIONS** Shade rows or cells of a Microsoft Word table in a variety of styles by adding a few PostScript commands to the table.

68000 CPUs with 030 accelerators from third parties like Dove? Or is the Apple SE/30 upgrade package the best performance-per-dollar route?

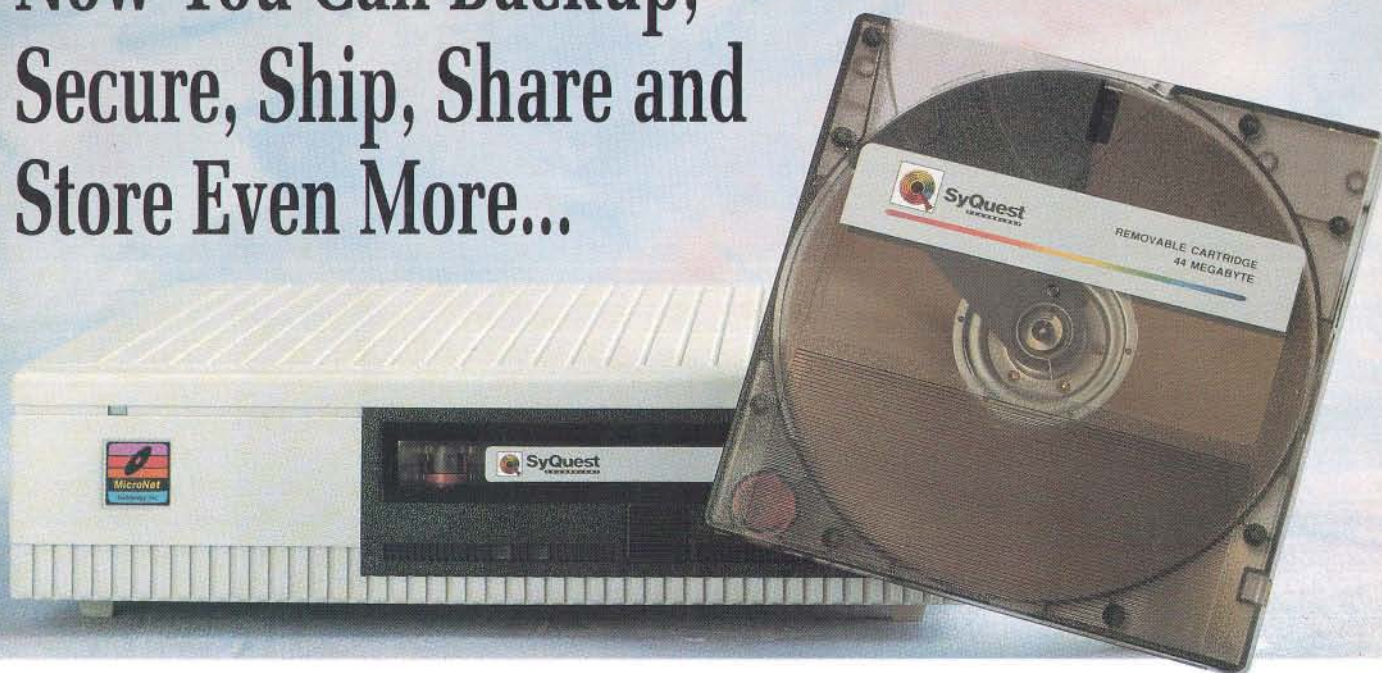
Kevin Brekke  
New York, New York

**A** With the earliest prerelease versions of System 7, SEs and Pluses  
(continues)

# Imagine Losing Everything In Your Mac.



# Now You Can Backup, Secure, Ship, Share and Store Even More...



## With the New MicroNet SyQuest 84 MB Removable Cartridge System.

First MicroNet gave you 42 MB of transportable storage with the MR-45 Removable Cartridge System. Now we give you the power to do even more. Introducing the new MicroNet 84 MB Removable Cartridge System.

MicroNet's MR-90 is developed around the popular SyQuest SCSI Winchester magnetic disk drive. Its additional capacity makes it great for backing up fixed hard disks or for transporting large graphics or CAD/CAM files. Like MicroNet's popular MR-45, the MR-90 gives you 20 ms average access and full featured device drivers. And the MR-90 can read data existing on thousands of 42 MB cartridges.



The MR-90 is compatible with Macintosh, IBM PC, PS/2, AT, Compaq, 286, and 386 and supports Novell Netware, SCO UNIX, A/UX, Xenix, and DOS. Internal PC systems are available with host adapter, hardware, cables and device drivers for easy installation. SyQuest removable cartridge systems use proven Winchester technology with rotary voice coil positioners. SyQuest systems are so well accepted that pre-press service bureaus have adopted them as a standard media for transporting data.

Get yourself the flexibility and power of a MicroNet 84 MB SyQuest removable drive today. Call our sales department at 1-714-837-6033.

**Quality You Can Count On.**



## **MicroNet Technology, Inc.**

20 MASON • IRVINE, CALIFORNIA • TEL: (714) 837-6033 • FAX: (714) 837-1164  
AppleLink: D1656 • Compuserve: 76004,1611

MR-45 and MR-90 are trademarks of MicroNet Technology, Inc. All other trademarks are the property of their respective owners.

Circle 116 on reader service card



# QUICK TIPS

## HOW TO

upgraded with PMMU-equipped accelerator boards—boards having a 68030 or 68020 CPU and a 68851 PMMU (Paged Memory Management Unit) chip—were able to use virtual memory. System 7's Memory control panel no longer allows virtual memory to become active on any Macintosh that has a Plus or SE ROM (Outbound users take note). Apple tells me those

ROMs do not support the traps (entry points) to several system-software routines that virtual memory needs to access. If it were only the routines that were missing, they presumably could be loaded from disk. But there's no simple way to retrofit missing support for traps. If you need virtual memory and the other features of System 7, an SE/30 upgrade looks like your best

bet—that or a used Mac II with a 68881 upgrade.

If all you need is virtual memory, take a look at Virtual from Connectix (415/324-0727). It gives you virtual memory with System 6 on a Mac equipped with a PMMU chip and is bundled with some accelerator boards. Who knows? Maybe Connectix will update Virtual to work with System 7. For more information on upgrade strategies, see "Getting Started with Hardware Upgrades," April 1991.

### A CLOCKWORK

**VERTIGO** You can design surrealistic screen-saver images like this with After Dark's MultiModule by creating duplicates of other modules and combining them. Then, by making duplicate MultiModules, you can use Randomizer to alternately display your MultiModule designs.



### Shady Table

**TIP:** To shade a cell in a Microsoft Word 4.0 table, type the following PostScript commands as a separate one-line paragraph at the beginning of the cell:

```
.cell. .75 setgray wp$box fill
```

Be sure to press Return at the end of the line. Then select the whole line and apply PostScript style to it by pressing the Shift key, choosing All Styles from the Format menu, and (continues)

# Now, Imagine Getting It Back.



You'll get your data back fast with SUM II.<sup>™</sup> New SUM II recovers crashed hard disks and accidentally thrown away files so effectively, *MacWEEK* magazine calls it "the best set of utilities available for file and disk recovery."<sup>\*</sup>

SUM II protects data, speeds up hard disks, and even includes a complete backup program. It's the

best-selling, highest-rated data protection and recovery program for the Macintosh.<sup>\*\*</sup> Imagine what it can do for you.

Get SUM II today! See your dealer or call (800) 228-4122 Ext. 688G for information.



Symantec Corporation, 10201 Torre Avenue, Cupertino, CA 95014. (408) 253-9600.

<sup>\*</sup>Steve Costa, *MacWEEK*, 10/3/89. <sup>\*\*</sup>*MacUser* 1989: Editor's Choice, 5 Mice Rating, and Eddy Award for Best Utility. *Macworld's* 1990 Reader's World Class Award. *Publish's* 1989 Reader's Choice Award. Best seller through National Distributors: Ingram Micro D, Softset, Kenfil. SUM is a trademark of Symantec Corporation.

© 1990 Symantec Corporation

## SYMANTEC.

The #1 Data Protection and Recovery Program



Circle 237 on reader service card



Full-bleed tabloid



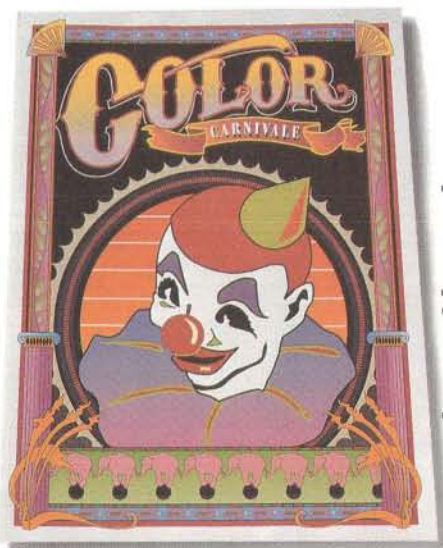
# Incomparable Comps.

# Outstanding Overheads.



Overhead transparency

Standard tabloid



# Fantastic Finish.

## Perfect printing.

Your work deserves it and ColorMaster® Plus was specifically designed to deliver it.

ColorMaster Plus has the right resolution: 300 dpi.

You get PostScript power: it's 100% Adobe compatible.

It's color correct: PANTONE certifies it.

Size selection? Letter or tabloid with full bleed—giving you the largest live image for any desktop printer.

Plenty of ports, too. SCSI, Appletalk, RS-232 and Centronics parallel so you can mix and match different computers

## New ColorMaster Plus



on one ColorMaster Plus printer. And all ColorMaster Plus models come with something you simply can't

get anywhere else: CalComp product quality and long term commitment to service, support and supplies. Our **1-year on-site warranty** is just one example.

Your incredibly intelligent next step? Call **1-800-932-1212** for more information. In Canada, 416-635-9010.

**We draw on your imagination.™**

**CalComp**

A Lockheed Company



## QUICK TIPS HOW TO

double-clicking PostScript in the dialog box that appears.

The number .75 determines the darkness of the fill. To make the fill lighter, use a number closer to 1, such as .9. To make the fill darker, use a number closer to 0, such as .5. When you print, make sure the Print Hidden Text option is not selected, or the PostScript commands will print as text instead of having the desired effect.

Alison Moore-Smith  
Orem, Utah

To shade a whole row instead of just one cell, replace the word *cell* in the PostScript line above with the word *row*. To get a finer-grained gray, use the following lines of PostScript instead:

```
gsave
.row. currentscreen
/dot exch def
pop
/angle exch def
90 angle {dot} setscreen
.90 setgray wp$box fill
grestore
```

To shade with parallel lines instead of dots, use this bit of PostScript:

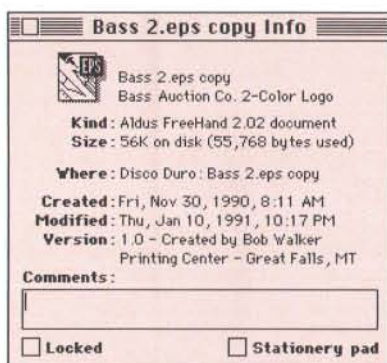
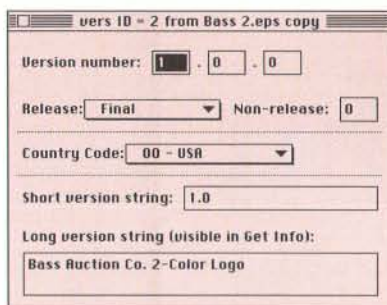
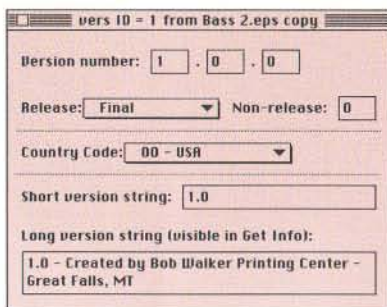
```
gsave
.row. 60 45 {pop} setscreen
.90 setgray wp$box fill
grestore
```

The number 45 above sets the angle of the fill lines. Replace it with 90 for horizontal fill lines, 0 for vertical fill lines, or any number in between. You can get wider-spaced fill lines by substituting smaller numbers for the number 60 above. The number .90 determines the thickness of the fill lines. A number closer to zero makes thicker lines.

See "Fancy Table Decorations" for examples of the original and the two variations. The inspiration for these variations came from the book *Learning PostScript: A Visual Approach* by Ross Smith (Peachpit Press, 1990)—L.P.

### Random MultiModule

**TIP:** I recently discovered a way to make the Randomizer module of After Dark [Berkeley Systems, 415/540-5535] alternately display several of my MultiModule screen-saver designs. [MultiModule lets you design combinations of any of the After Dark screen-saver modules and designate one design to display. Randomizer lets you randomly (or sequentially) display any modules you choose, including the currently designated MultiModule design.] Just open the After Dark Files folder in your System Folder, duplicate



**WHO'S RESPONSIBLE** By creating two *vers* resources (top and middle) using ResEdit 2.1 or later, you can add text just below the file name and next to the word *Version* in a file's Get Info window (bottom).

(⌘-D) MultiModule as many times as you want, and name each duplicate uniquely. Then, in the After Dark section of the Control Panel, designate a different display combination for each MultiModule and select them all in the Randomizer module.

John Willsey  
Walnut, California

For more-exotic effects (such as those displayed in "A Clockwork Vertigo,") *Macworld* editor Cathy Abes suggests making several copies of any other module you like. Choose different settings for each copy, and layer any or all of them into your MultiModule design (for best results, make each one transparent). One warning, though: don't delete a design from any MultiModule unless you really don't want it; deleting a design from one Multi-

Module automatically deletes it from all the others as well.—L.P.

### Lock Cracker

**TIP:** It is possible to unintentionally remove a program or document that has been locked using the Finder's Get Info command (File menu). If you are pressing the Option key while dragging an item to the Trash, you get no warning message that the item is locked.

Naturally, being able to accidentally remove items is dangerous. On the good side, you can use this technique to avoid tediously digging through nested folders looking for locked items and using the Get Info command to unlock each one individually. Instead, simply select the folder that contains the nested items, press Option, and drag it to the Trash. Its entire contents, including all locked items, will be discarded.

Dave Carey and Ken Visser  
Notre Dame, Indiana

You can also use the Option key to bypass warnings that normally appear when you drag application programs and System files to the Trash. Be careful!—L.P.

### ADB Long Lines

**TIP:** You can find an ADB cable longer than the standard Apple keyboard cable at your local video accessories store. ADB cables are identical to the new S-Video cables, which are used to interconnect S-VHS VCRs and S-Video TVs. You should be able to find cables 6 feet and longer. Remember, however, that the total length of ADB cable connected to a Mac ADB port should be less than 5 meters (about 16 feet). This will get you away from all that electromagnetic radiation emanating from your monitor.

Fernando Alves  
Los Angeles, California

### Establishing Credit

**TIP:** When I create a logo or some other finished work for clients, I like to annotate the file with a credit line. Adding a comment to the file using the Finder's Get Info command isn't permanent enough. Anyone can change or erase the comment, and (continues)





## Introducing a big improvement over this basic piece of disk handling equipment.

Meet Jukebox Five,<sup>™</sup> the handy new disk exchanging machine that takes the manual labor out of loading and unloading diskettes. Jukebox Five hooks up to your Mac\* in seconds and works its way through a stack of up to 15 disks—automatically. It's the most amazing time-saver since the introduction of the tape drive, without the high price.



Jukebox Five snaps onto your Mac in seconds.

any Macintosh software, including the top-selling backup program, Fastback II.<sup>™</sup> So unattended disk backups are a snap. And it comes complete with a time-saving utility program that lets you format diskettes,



Load it and leave it to process up to 15 diskettes.

copy from hard disk to floppies and duplicate multiple disks without even being there.

To find out more about Jukebox Five, call 1-800-873-4384. Buy Jukebox Five

and get a free box of diskettes. Just write



Use it to back up, copy, or format automatically.

"diskettes" on the registration card and return it to us. This is a limited-time offer, so get your hands on one today.

\* Fits Macintosh models SE/30, II, IIcx, IIci and IIx.  
Fifth Generation Systems, Inc.  
10049 N. Reiger Road  
Baton Rouge, LA 70809  
Tech Support: (504) 291-7283



Circle 364 on reader service card



# One Of America's Most Successful Companies Makes The Least Money.

**FORTUNE**

AMERICA'S BEST RUN CHARITIES		
CHARITY	TOTAL ANNUAL REVENUE (in millions)	SPENDING ON PROGRAMS (in millions) % of total
CARE	\$397	\$376 95%
Volunteers of America	\$166	\$151 91%
Salvation Army	\$865	\$740 86%
UNICEF	\$463	\$392 85%

FORTUNE Magazine has named CARE the best run, best managed charity in America. We aren't surprised.

95% of every dollar CARE receives goes to help impoverished people. No other charity gives more to charity. So when you give to CARE, please give generously.

You know we will.

**CARE** We're Helping People  
Learn To Live Without Us.

1-800-242-GIVE

comments disappear if someone rebuilds the desktop. Instead I put the credit information in a version resource using ResEdit 2.1 or later as follows (see "Who's Responsible"):


1. Make a copy of the file you want to annotate, and use ResEdit to open the copy. If you get a message asking whether you want to add a resource fork to the file, click OK.

2. Make a new resource of type *vers*. To do that, choose Create New Resource from the Resource menu. In the dialog box that appears, select the *vers* resource type and click OK. A couple of windows appear. Enter the credit information at the bottom of the active window, whose title begins "vers ID = 128." Change the resource ID number from 128 to 1 using the Get Resource Info command (Resource menu).

3. Repeat Step 2 to create another *vers* resource. In the space where you entered credit information in Step 2, enter some text that describes the contents of the file. Change the resource ID number from 128 to 2.

4. Quit ResEdit, answering Yes when it asks whether you want to save changes. The text in the *vers* 1 resource appears next to the label *Version:* in a Finder Get Info window, and the text in the *vers* 2 resource appears next to the file icon just below the file name.

Bob Walker  
Great Falls, Montana

.....  
We pay from \$25 to \$100 for tips published here. Send tips or questions (include your address and phone number) to Quick Tips, Macworld, 501 Second St., San Francisco, CA 94107. Send electronic mail to CompuServe (70370,702) or MCI Mail (294-8078). We regret that, due to the volume of mail received, we're unable to respond personally to each letter. All published submissions become the property of Macworld. 

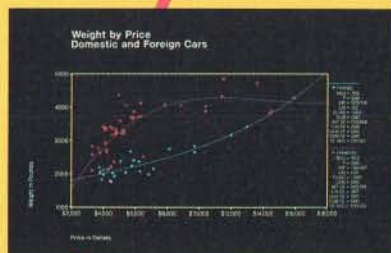
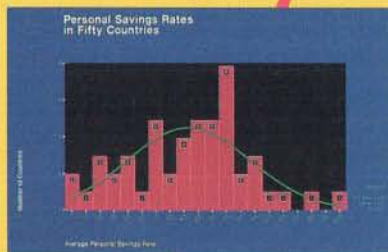
Lon Poole answers readers' questions and selects their tips for this monthly column. You'll find all the best tips from six years of this column in his book *Amazing Mac Facts* (Microsoft Press, 1991).



# Bend Us. Shape Us. Any Way You Want To.

As long as you love us, it's all right. And love us you will. Statistical software from SPSS is designed to work the way you work. By giving you the power to enter, edit, manage, analyze and present data on virtually every type of PC, workstation, minicomputer and mainframe. By giving you better decision-making ability through the most comprehensive set of statistical procedures available. And by giving you a choice of options to meet your specific data analysis needs. So if you're thinking about statistical software, think about flexibility. Because flexibility means value. And when it comes to value, we top the charts.

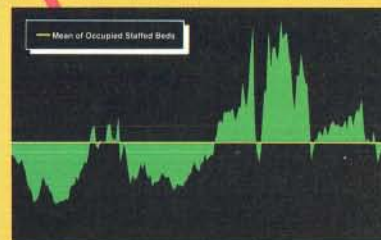
**The Accessibility** of SPSS makes it ideal for beginners and advanced users alike. With its straightforward menus and context-sensitive help and statistical glossary, SPSS gets you started fast. And with the help of our time-saving programming facilities, including macros and a matrix language, you'll have the power to go deeper even faster. And regardless of your experience with statistics, you'll be supported by the documentation and training that's set the industry standard for over 25 years. Documentation that INFOWORLD calls "The Best in the Business."



**The Statistical Procedures** in SPSS give you the power to examine data more thoroughly, revealing patterns that might otherwise go unnoticed. We offer the most in-depth group of statistical procedures available, including univariate and multivariate descriptives, model building, hypothesis testing, clustering and classification, survival analysis, time series and perceptual mapping. No matter what your question, SPSS provides the flexibility to find the answer.

**The Data and File Management** capabilities of SPSS give you unparalleled flexibility when preparing data for analysis. With SPSS, information can be quickly reorganized, cleaned and transformed, regardless of size or structure. Multiple missing values for nonresponses can be defined and labeled according to your specifications, while built-in controls easily manage information stored in complex file formats, including custom file formats. Self-documenting portable files give you the freedom to move your analysis from one computing environment to the next, saving time and resources. And because SPSS supports most popular microcomputer file types including Lotus®, DBF and SYLK, and offers free interfaces to such leading SQL-based database management systems as Informix™, ORACLE® and Sybase™, there's no need to re-enter data or write out intermediate files.

**The Choice of Options** offered by SPSS provides the flexibility to meet both your immediate and future data analysis needs. Unlike other statistical packages, we give you more than just the ability to choose between the options you may or may not need. We give you a choice of options designed to work together. Options that work as a system, providing the best possible software solution. Options for data entry and editing. Or producing publication-ready tables and reports. Options to analyze the past and help predict the future. Or to present your results with over 40 high-impact color displays, including a variety of charts and maps. No matter what you do, SPSS can help you do it better.



So if you're in the market for statistical software, keep an open mind. Go with the value of SPSS, suppliers of statistical solutions to over 2 million users worldwide. Because when you have the advantage of flexibility, the chances are you'll still be a hit tomorrow.

Call 1(800) 45-STATS or FAX (312) 329-3668.

# SPSS

**We're Making It Easier To Decide.**



Statistical Software For All Leading Computing Environments. Offices in Chicago · Washington, DC · Chertsey, UK · Munich · Singapore · Stockholm · Sydney · Tokyo · Vianen, The Netherlands · And Distributors Worldwide

Circle 210 on reader service card





## ● AUDIO CASSETTE ORDER FORM ●

***Cassettes are \$8.50 Each (U.S. Funds Only) • Please Check Tapes Desired***

☐ **Purchase Any 12 Cassettes and get 2 FREE!! • All For ONLY \$102.00!!**

☐ **ENTIRE CONFERENCE!!** • All Cassettes Listed (24 Tapes/2 Albums) • **ONLY \$149.95!!**

Sessions recorded in San Francisco, California (USA) • January 7-8, 1991

- |             |                                                                                                                                                                                                    |             |                                                                                                          |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------|
| □ 91MACW-1  | How to Design and Implement an Effective Global Marketing Plan (1 tape \$8.50)                                                                                                                     | □ 91MACW-14 | Keynote Address: <i>David Szetela, Apple Computer</i> (\$8.50)                                           |
| □ 91MACW-2  | International Product Development, Translation and Localization (1 tape \$8.50)                                                                                                                    | □ 91MACW-15 | Japan (1 tape \$8.50)                                                                                    |
| □ 91MACW-3  | Government Agencies and Services, Export Licensing and Subsidized Loan Programs (1 tape \$8.50)                                                                                                    | □ 91MACW-16 | USSR and Eastern Bloc (1 tape \$8.50)                                                                    |
| □ 91MACW-4  | Financial and Legal Issues, Contract Negotiations and Agreements (1 tape \$8.50)                                                                                                                   | □ 91MACW-17 | Latin America (1 tape \$8.50)                                                                            |
| □ 91MACW-5  | Finding International Distribution Channels, Partnering, Strategic Alliances and Joint Ventures • Sales, Service and Support — How to Keep Communications and Expectations in Line (1 tape \$8.50) | □ 91MACW-18 | Australia and New Zealand (1 tape \$8.50)                                                                |
| □ 91MACW-7  | Keynote Address:<br><i>James Martin, Macworld Communications</i> (1 tape \$8.50)                                                                                                                   | □ 91MACW-20 | Rest of World (1 tape \$8.50)                                                                            |
| □ 91MACW-8  | Germany, Austria and Switzerland (1 tape \$8.50)                                                                                                                                                   | □ 91MACW-21 | Setting up a Local Presence, Living Overseas and Finding Qualified Local Human Resources (1 tape \$8.50) |
| □ 91MACW-9  | Scandinavia (1 tape \$8.50)                                                                                                                                                                        | □ 91MACW-22 | Aligning Advertising and Public Relations with Local Customs and Traditions (1 tape \$8.50)              |
| □ 91MACW-10 | United Kingdom (1 tape \$8.50)                                                                                                                                                                     | □ 91MACW-23 | Creating Innovative Sales through Licensing, Bundling and OEM Agreements (1 tape \$8.50)                 |
| □ 91MACW-11 | France (1 tape \$8.50)                                                                                                                                                                             | □ 91MACW-24 | How to Discourage Piracy, Prevent Grey Marketing and Increase Sales (1 tape \$8.50)                      |
| □ 91MACW-12 | The Netherlands, Belgium and Luxembourg (\$8.50)                                                                                                                                                   | □ 91MACW-25 | Strategies for Developing your own International Booths, Conferences and Road Tours (1 tape \$8.50)      |
| □ 91MACW-13 | Italy, Spain & Portugal (1 tape \$8.50)                                                                                                                                                            | □ 91MACW-26 | Gazing into the Crystal Ball - Trends in Overseas Distribution and Marketing (1 tape \$8.50)             |

## 1991 MACWORLD INTERNATIONAL SUMMIT CASSETTES

**Mail Orders:** This entire form should be mailed directly to PROFESSIONAL PROGRAMS at the address below. Please allow 2-3 weeks for 1st class or UPS Delivery.

**Shipping Charges:** Include \$1.50 per tape, \$4.00 minimum, \$10.00 maximum (US). **Canadian Shipping:** \$1.00 per cassette, \$4.00 minimum via air mail.

**Overseas Mail:** \$2.00 per cassette, \$4.00 minimum.

**Facsimilie:** Please FAX the ENTIRE order form to PPI with your complete ordering address and credit card information to **1-818-764-7658**.

**Purchase Orders:** This form must be accompanied by an original Purchase Order. We also accept FAXED Purchase Orders. Cassettes will be shipped with invoice enclosed. **Please add \$2.00 Invoicing Fee.**  
Tax ID# 95-4062237

Amount for Cassettes (US funds)	\$ _____
Shipping Charges	\$ _____ (SEE ABOVE)
Sales Tax 6 1/2%(California Only)	\$ _____
<b>TOTAL OF ORDER</b>	\$ _____

### PAYMENT METHOD

Exp. Date /

☐ check[illegible]

---

Signature (required on all charges)

Name: \_\_\_\_\_

**Organization:** \_\_\_\_\_

**Street Address:** \_\_\_\_\_

City, State, Zip: \_\_\_\_\_

Phone ( )

**Professional Programs Audio Cassettes**  
12035 Saticoy Street • Suite "B" • North Hollywood, CA. 91605  
 (818) 764-7087 • FAX (818) 764-7658







## Simplify Your Computer Buying Decisions Call InfoWorld's PC Buyer Base

Finally, there's a way to buy computer products without becoming buried in research.

Introducing InfoWorld's PC BuyerBase. The one-call computer buying resource.

With PC BuyerBase, you'll save time by getting all the information you need to make the right buying decisions—in one place. And it only takes a phone call. That means no more stumbling through endless stacks of product literature. PC BuyerBase gives you a direct line to a Product Information Specialist who will answer your questions and give advice on your buying strategy. Or, if you prefer using electronic access, our Bulletin Board System will be available 24-hours a day.

**When you call PC BuyerBase you get:**

- Complete product information with detailed technical specifications.
- InfoWorld's Product Comparisons, Reviews and Report Cards.
- National and regional average pricing guides.
- Dealer locations by city.
- Abstract product information from *PC World*, *PC Magazine*, *PC Week*, *Byte*, *Mac Week*, *MacWorld*, and more.

No other service brings computer buying information together like PC BuyerBase. Not only can we organize the buying information you need, we'll send it to you at nominal charge via telephone, fax, US mail or overnight delivery.

Let InfoWorld's PC BuyerBase take the hassle out of managing your library of buying information.

Call today for the easiest path to the right buying decision.

For charter rates and information call a Product Information Specialist at 1-800-624-3301.

This time, save time. Call now.

## PC BuyerBase "The One Call Computer Buying Resource"

Circle 298 on reader service card

**INFO  
WORLD**



# SOME GREAT IDEAS JUST GET BETTER AND BETTER.



MacLinkPlus is the first choice of thousands of Macintosh owners worldwide, for all their file transfer and translation needs. It has been since 1984.

No one has ever done it better. Until now.

Introducing MacLinkPlus 5.0. An unbeatable array of over 350 file translators that provide word processing, spreadsheet, database and graphics file conversions between the Macintosh and PC, NeXT and Sun applications.

We've added over 50 new translators for the hottest new products, including Microsoft Word for Windows, MultiMate 4.0, Windows graphics, and WordPerfect 2.0 for the Macintosh. We now support advanced document features such as tables and embedded graphics flawlessly. We've even included DOS Mounter software from Dayna so you can access MS-DOS disks with your SuperDrive right on the desktop.

For file translations when you're connected via a network, file server or SuperDrive, all you need is MacLinkPlus/Translators. And for the added capability of file transfer using a cable or modem, MacLinkPlus/PC includes the same full array of translators as well as a serial cable and communications software.

MacLinkPlus. A great idea that's now better than ever. For more information, call DataViz at (203) 268-0030.



**Version 5.0  
Now Shipping.**

## DATAVIZ<sup>TM</sup>

THE DATABRIDGE SPECIALISTS

Circle 36 on reader service card





# Getting Started with Multimedia

WHAT IS IT? CAN YOU USE IT? WHAT WILL IT COST?

M

BY JIM HEID

ultimedia is many things—literally and figuratively. Literally, multimedia is the integration of two or more communications media. It's the use of text and sounds, plus still and moving pictures, to convey ideas, sell products, educate, and/

or entertain. It's built around the premise that anything words can do—words, sounds, and pictures can do better. The more, the media.

Some see multimedia as the harbinger of an era when computers will routinely convey information with sound and animation, as well as text images, and when television will become more interactive. But others see it as the victory of sound bites and flashy visuals over the printed word.

Multimedia brims with potential—and the potential for misuse. It can also be technically complex and, in its most advanced forms, quite expensive. This month, I explore the world of multimedia, spotlighting some ways in which it is used, as well as the components that form a complete system.

## The Multi Levels of Multimedia

Not long ago, combining sound and visuals—say, jazzing up a slide show with music or narration—was about all there was to multimedia. It didn't require much equipment or technical expertise. You could create title slides



and other visuals using a presentation program such as Aldus Persuasion or Microsoft PowerPoint, and then use a stereo cassette deck to record and play the sound track.

Today, multimedia generally means using an *authoring* program such as HyperCard or MacroMind Director to create and playback a production. You can have animation,

such as bullet chart items that slide on screen, and *transitions*, such as dissolves and fades between visuals.

A more advanced level of multimedia might use animation sequences that illustrate complex concepts, such as how a steam engine works or how heart valves operate. At this level, your role as producer becomes more demanding. Designing and executing a complex animated sequence requires artistic skills and some knowledge of animation techniques. It also requires software with more advanced animation features than HyperCard's—more about that later.

A sophisticated multimedia production might also incorporate still images captured from a video camera or VCR. A corporate presentation might include shots of a new factory; a medical tutorial might show images captured from a videotape of a surgical operation. For this, you need additional hardware as well as some knowledge of video and lighting techniques.

Then there's sound, which authoring programs support in a few ways. They can play back short sound passages you record directly into the Mac using an add-on such as Farallon Computing's MacRecorder or using the recording circuitry built into the Mac LC and IIsi. So, an animated heart can beat to the sound of a recorded heart, and an animated steam engine can chug as a locomotive (*continues*)



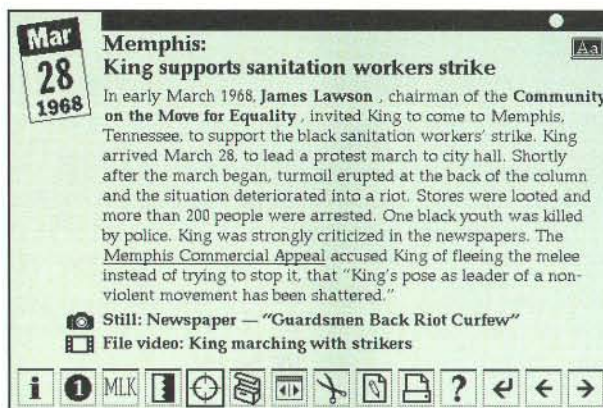
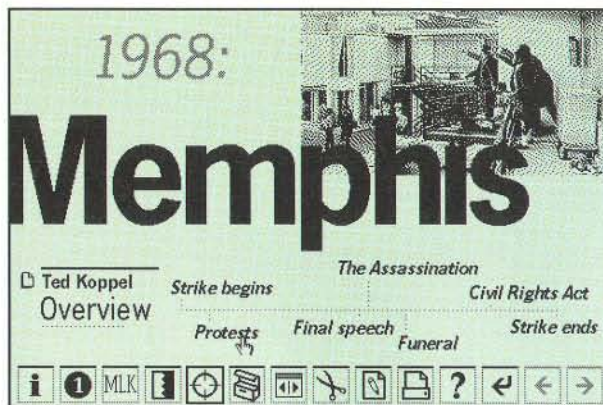
sound plays. Authoring programs can also control electronic synthesizers and CD ROM players, which can store hundreds of megabytes of data as well as CD-quality audio. Thus, a corporate presentation can play to the sound of CD-quality background music, or a music tutorial can display text on the screen while a piece plays.

### Passive versus Active

Multimedia productions can be linear affairs—watched from start to finish, like a slide show or a TV program. But the most significant—and exciting—aspect of Mac multimedia is *interactivity*. The most advanced multimedia productions are nonlinear and interactive. Instead of passively watching from beginning to end, you use the Mac to interact with the production, setting your own pace and branching to different topics and areas as they interest you. With interactive multimedia, the Mac and programs like HyperCard become more than devices for presenting various media—they become tools for navigating the media themselves.

The primary tools of multimedia navigation are on-screen buttons and other *hot* areas that, when clicked, take you to other screens, display windows containing additional information, or play sounds—or even video sequences. Interactive multimedia often makes use of yet another piece of hardware, a *videodisc player*, whose discs look like a cross between an LP record and a compact disc.

Videodiscs and interactive multimedia complement each other beautifully, primarily because a videodisc is a *random-access* medium. One side of a videodisc contains 54,000 numbered *frames*, and a player under the Mac's control can skip to any one of them almost instantly. A videodisc player can display frames continuously to show up to 30 minutes of moving footage, or it can freeze on any one frame to show a still. Thus, a multimedia production can include moving and still pictures stored on the same videodisc—along with up to 30 minutes of two-channel audio per side. Those two audio channels can be used for stereo, or they can be used separately to hold, for example, narration in two languages.



### Multimedia in Education

Clearly, interactive multimedia has tremendous potential as an educational tool. Nowhere is this better illustrated than in a series of videodisc packages produced by ABC News Interactive and distributed by Optical Data Corporation. In the Martin Luther King Jr. package, you use HyperCard to explore a videodisc brimming with footage of civil rights protests, vintage news reports, and King's speeches, as well as still photographs, maps, and charts (see "Interactive History"). You can watch the entire "I Have a Dream" speech while reading King's prepared text on the Mac's screen—and you can see where, halfway through, he diverged from the prepared text to capture the attention of millions. Other ABC News Interactive presentations include The '88 Vote; In the Holy Land; The Great Quake of '89 (distributed by The Voyager Company); and AIDS.

Each package in the ABC News Interactive series also includes a documentary maker with which students can assemble their own documentaries based on the videodisc's

images and news footage. It's this feature that raises a red flag among interactive multimedia critics, who wonder whether students are learning about Martin Luther King Jr. or learning how to produce TV documentaries and splice sound bites.

Another example of interactive instructional media is Warner New Media's Audio Notes series, which uses CD ROM discs and HyperCard to let you listen to and learn about music. One three-disc package presents Mozart's opera *The Magic Flute*; a one-disc package called *The String Quartet: The Essence of Music* presents a Beethoven string quartet. As the latter plays, you can use an accompanying HyperCard stack to view any of several measure-by-measure commentaries on the music, each assuming different levels of musical knowledge (see "Listen and Learn"). Other parts of the stack contain graphical data on Beethoven and other tutorials on music theory.

Optical Data Corporation produces complete packages that teachers can use as is or as tool kits for (continues)

### INTERACTIVE

**HISTORY** Two cards from the HyperCard stack that controls ABC News Interactive's Martin Luther King Jr. program. Clicking on a topic displays a card containing a timeline (top). Clicking on a subject on the timeline displays a card (bottom) with descriptive text and buttons that display accompanying visuals from the videodisc. Another card displays definitions of any terms, or biographies of any names, that appear in boldface.



See us at the N.A.B. show April 15-18  
Las Vegas/West Hall/booth #7409

# EXPLORER™

## Broadcast-quality video is finally coming to the Macintosh.

Forget everything you've heard about Macintosh® video. With Intelligent Resources' Video Explorer,



*Takes up just one NuBus™ slot in your Macintosh.*

video will never be the same! We've invented a totally new kind of video card for the Macintosh, with incredible real-time video processing capabilities. The Video Explorer is a multi-synchronous card that supports all

major broadcast video and computer graphic timing standards. On it you'll find a state-of-the-art custom chip set; one of the largest and most powerful ever produced for personal computers.

Since the Video Explorer is a programmable 32-bit digital video engine, there's almost no end to the broadcast-quality effects you'll be able to achieve. You'll have full control of video processing: frame by frame, line by line,

and pixel by pixel. You'll be able to perform fades, wipes, dissolves, and digital video effects.

You can key on chrominance and luminance signals, combine multiple live video signals, and even overlay anti-aliased titles and graphics on live video.

The Video Explorer can simultaneously manipulate video signals from a variety of sources, both live and computer generated. By genlocking to a common sync signal, a Video Explorer can accept

video from an external source as well as from internal sources cascaded through our digital video bus. This downstream capability allows linking of video bus-compatible cards for even more sophisticated special effects.

Soon, the power of this new video technology will be unleashed. Join us as the serious fun begins!

Intelligent Resources, 1626 Colonial Parkway, Inverness, Illinois 60067.  
Phone (708) 705-9388 or Fax (708) 705-9410.



*Luminance and chrominance keys*



*Anti-aliased titles and graphics*



*Multiple inputs*



*Real-time effects*



## INTELLIGENT RESOURCES

Copyright © 1990 Intelligent Resources Integrated Systems, Inc. All Rights Reserved. Video Explorer is a trademark of Intelligent Resources Integrated Systems, Inc. Macintosh is a registered trademark of Apple Computer, Inc. NuBus is a trademark of Texas Instruments, Inc.

Please circle 135 on reader service card.





## “What’s wrong with copying software?”

“I use a lot of programs on my personal computer, and I copy them all the time.”

“I’m a programmer. Every time you copy one of my programs, you’re taking away my income—I depend on *sold* programs for a living.”

“Oh, come on. I bought it: I have a right to copy it.”

“**You *do* have a right to make a back-up, that’s true. But when you start copying programs for your friends and co-workers, that’s breaking the law.**”

“What law? Any copying I do is in the privacy of my own home.”

“**It doesn’t make any difference where you do it. Every time you copy a program without permission from the publisher, you’re committing a federal offense.**”

“That’s all right, I won’t get caught.”

“**You’re missing the point. The issue isn’t “What can I get away with?”—it’s “who am I hurting?”**”


Remember, lots of people worked hard to produce every program you use: designers, programmers, distributors, retailers, not to mention all the people who support users. They have a *right* to be compensated for their efforts, and their major compensation is through software sales.”

“Well, I don’t mean to hurt all those people—or anyone, really.”

“**Unfortunately, that’s what copying does: it hurts people. And, ultimately, it hurts people like you, who want new and innovative software.**”


**Do you copy  
software?  
Think about it.**

**The unauthorized copying of software is a crime.**

**SPA**  Software Publishers Association  
Suite 1200  
1111 19th Street, N.W.  
Washington, D.C. 20036



1 2 3 4 5 Exploring The Music - Movement 1 0:40 m12



Here are some ideas to think about as you listen:


- How do the instruments sound? Are they mellow? Screechy? Song-like?
- Is the music slow or fast?
- Is it loud or soft?
- Are there breaks in the music, or does it flow continuously?
- Does the music imply a mood? Is it joyful music? Angry? Impatient? Wistful?

Theory Vs Fact Images Of Beethoven The String Quartet

1 2 3 4 5 Blueprint - Movement 1 4:08 m73

Violin I	Violin II	Viola	Cello
C	FREE MATERIAL	FREE MATERIAL	C

This movement's building block: FUGUE SUBJECT



Key: C# Minor Form: Fugue Meter: Alla Breve Episode 2

The Fugue Quartet Map Glossary Index

creating their own instructional materials. The Planetscapes package, for example, contains a videodisc laden with images of planets taken by the Voyager spacecraft, of North America taken by Landsat satellites, and of space shuttle missions and components. Accompanying stacks let you browse the Voyager images, view Landsat images by clicking on a map, and learn about the space shuttle. You can also create your own stacks that use the videodisc images.

To give educators a hands-on overview of interactive multimedia's potential—and to allow them to create their own multimedia materials—researchers at Apple's Multimedia Lab spent two years developing a package called The Visual Almanac. It comprises a CD ROM containing 25MB of HyperCard stacks and digital audio; a workbook; and a videodisc with 7500 sounds and moving and still images. The HyperCard stacks include 14 student activities in science, the arts, social studies, and mathematics. There's also a composition work space that lets you search for images and sounds based on keywords you type, and

then assemble them into stacks. The Visual Almanac is available for the remarkably low price of \$100 from Optical Data Corporation.

Of course, interactive multimedia has applications beyond the classroom. Interactive information kiosks in airports, at shopping malls, or on trade show floors can provide directories and profiles of cities, stores, or exhibitors. Interactive presentations can spotlight a concept, company, or product in an engaging way. Interactive museum exhibits can enliven any subject. In San Francisco's Exploratorium, you can "fly" over the Bay Area, viewing aerial footage and setting your own course using a trackball.

#### Examining the Pieces

Here's a closer look at the software and hardware components involved in multimedia ("Multimedia to the Max" illustrates how they interrelate) and a partial list of products from each category.

- **Authoring** This key software lets you direct a production's cast of audio and visual characters. HyperCard (continues)

#### LISTEN AND

**LEARN** Warner New Media's The String Quartet lets you listen to a digitally recorded Beethoven string quartet playing on a CD ROM drive while you read on-screen text in any of several knowledge levels. Level 1 (top) is for listeners with the least musical knowledge; level 4 (bottom) analyzes the structure of the currently playing segment. In the upper-right corner, a counter displays elapsed time as the music plays.

**AFFORDABLE COLOR**

Mac LC \$3488  
SAVE \$1066  
LEASE \$108/mo.

Look Toto, Color for Auntie Em!

**This MacFriends System includes**

- 2 MB Fast RAM • 40MB HD
- 14" Color Monitor w/Tilt Swivel & Cable
- 265 CPS Printer w/cable, tractor feed & 16K print buffer
- Quicken Financial w/check writing
- Full Word Processor w/spell check
- Full Spreadsheet w/60+ functions
- Full Page Layout w/graphics control
- HyperCard w/address & appt. books
- System Software w/F/DA, D.F.A. & M.M.
- Quickdix mini database
- 2 Great Games
- Reads DOS & Apple II disks
- Keyboard, Mouse & Pad

A Mac, a printer and software. Oh My! Everything I need... what a super buy!

**There's No Place Like MacFriends**

- Friendly Knowledgeable Staff
- 1000's of Products In Stock
- Pre-Configured & Tested
- Unbeatable Support & Service

**Ask About QuickKare**

Custom Configuration? It's Our Specialty!

Call our MacFanatics today toll free

**800 331-1322**

...or use our 24 hour QUICKFAX (503)255-0067  
COMPUERVE "GO MF"

**MacFriends**

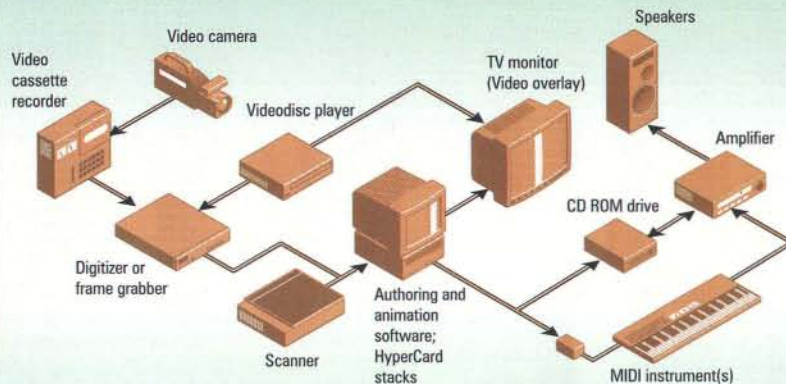
Call MacFriends for color that doesn't cost a pot of gold!

AMERICA'S "MAC-ONLY" STORE

**FEDERAL EXPRESS**



## Multimedia to the Max



A complete multimedia setup might use these components: a video camera or recorder and digitizer or frame grabber for incorporating graphics; a videodisc player for showing still and moving images; and a CD ROM drive and MIDI synthesizer for high-quality audio.

is the most popular authoring program; its relatively-easy-to-learn programming language, HyperTalk, lets you create simple animations and establish links between on-screen hot spots and other cards. HyperCard users might want to try Motion Works' Addmotion, which adds animation features to HyperCard 2.0, enabling you to author and animate without switching between programs. Silicon Beach Software's SuperCard provides better color support than HyperCard and gives you the ability to create stand-alone applications, people who don't have SuperCard. Spinnaker Software's Plus offers similar features and is also available for IBM PCs. You can move Plus productions between Macs and PCs.

More-specialized authoring programs include Farallon Computing's MediaTracks, MacroMind Director, and Authorware's Authorware Professional. MediaTracks lets you produce Macintosh training materials by recording screen activity and then adding graphics, digitized sounds, and on-screen navigation buttons. Director 2.0 has a HyperTalk-like language, Lingo, for creating interactive animations containing navigation buttons; Director also includes a player application that lets others use your productions without their having to own Director. Authorware Professional is a high-end (\$8050) package that provides so-

phisticated animation features and lets you create interactive productions, without programming, by drawing links between the production's components. Authorware also provides training, customizing, and production services for its clients.

- **Animation programs** In addition to Director and Authorware, there's Bright Star Technology's interFACE, which lets you create *agents*—talking heads whose mouths move and facial expressions change as digitized speech comes from the Mac's speaker. Agents can guide users through a production or act as on-screen teachers. They can be used with HyperCard, Director, and other programs that support HyperCard external commands (XCMDs).

Electronic Arts' Studio/1 is a monochrome paint program that lets you create simple black-and-white animations that you can play back within HyperCard and other authoring programs. Three-dimensional animations made with 3-D drawing packages such as Silicon Beach's Super 3D and Paracomp's Swivel 3D Professional can also be played back within authoring programs. For more advanced animations with special effects, you can use Linker Systems' The Animation Stand. It can also produce broadcast-quality video animations in conjunction with high-end animation hardware such as Diaquest's DQ-

Animaq, a Mac II board that controls professional video recorders on a frame-by-frame basis.

- **Video hardware** For recording a presentation on videotape, you might use a board—such as one from RasterOps or Radius—that outputs NTSC-compatible video. For capturing video images from camcorders, videodiscs, or VCRs, you might use a *digitizer* such as Koala Technologies' MacVision. For faster digitizing, use a *frame-grabber* board such as RasterOps' FrameGrabber 324NC, Orange Micro's Personal Vision, or Workstation Technologies' WTI-Moonraker.

With boards such as Aaps' Digi-Video, Computer Friends' ColorSnap 32+, and Radius's RadiusTV, you can display video from VCRs, videodiscs, or TV stations in a Mac window. To combine Mac graphics and text with a video source, you need *video-overlay* hardware such as Mass Microsystems' ColorSpace III, Truevision's NuVista+, or Computer Friends' TV Producer Pro.

Then there are VCRs and videodisc players. NEC Technologies' PC-VCR is an S-VHS VCR you can attach to the Mac and control much like a videodisc player. VHS videocassettes cost far less to produce in small quantities than videodiscs, so a PC-VCR could be an economical alternative if you produce your own video materials. But a videocassette isn't a random-access medium; it can take as long as 2½ minutes to locate a given point on the tape. As for videodisc players, Pioneer and Sony make the largest assortment with RS-232C serial interfaces that connect to the Mac.

- **Audio** To record and play back CD-quality audio, you need Digidesign's Audiomedia board. Throw in a big, fast hard drive, too, because CD-quality stereo requires 20MB of disk space per minute. As an alternative, use a MIDI interface to connect a Mac to one or more MIDI synthesizers and play back MIDI *sequence* files, which use a small fraction of the space. Passport Designs' Music Data company sells hundreds of pre-recorded MIDI sequences (MIDI Records and MIDI Hits). You might also consider Digidesign's Mac-Proteus board, a version of E-mu (*continues*)



Director	GARY MILLER
Producer	GARY MILLER
Editor	GARY MILLER
Writer	GARY MILLER
Musical Score	GARY MILLER
Animation	GARY MILLER
1st Cameraman	GARY MILLER
2nd Cameraman	GARY MILLER
Wardrobe	GARY MILLER
Make-up	GARY MILLER
Special Effects	GARY MILLER
Location Scout	GARY MILLER
Content Expert	GARY MILLER

No one can design a better multi-media presentation than you.

Introducing the PC-VCR from NEC. It doesn't take millions to produce a professional-looking presentation.

You don't even need a Hollywood contract. All you need is the PC-VCR from NEC, a Macintosh computer with HyperCard 2.0 and the appropriate software. And you can write, design, produce and edit quality presentations right at your desk. The PC-VCR combines the power of video with your personal computer.\* Letting you create multi-media presentations that are both exciting and easy to understand. Designing a business presentation with the



Macintosh is a registered trademark of Apple Computer, Inc. IBM is a registered trademark of the International Business Machines Corporation. NEC is a registered trademark of NEC Corporation. © 1991 NEC Technologies, Inc.

PC-VCR will save you time and money, too. With NEC's unique software,\*\* you can achieve frame accurate indexing and seamless cut edits on VHS and Super VHS through simple mouse commands. It's quick, easy and you no longer have the expense of outside editing houses or video disc mastering. Best of all, the PC-VCR gives you full-motion capability, and allows you to combine that motion with other computer graphics. In other words, the PC-VCR is your chance to write, direct and star in your own production. Doesn't that sound like fun? For more information or location of your nearest dealer, call 1-800-562-5200, ext. NEC. In Canada, call (416) 795-3500.

\* PC-VCR compatible with any Macintosh or IBM (and 100% compatibles) computer system with one megabyte of memory, 640K of base DOS memory, plus 384K extended, not expanded, memory. \*\* Sold separately

**C&C** Computers and Communications

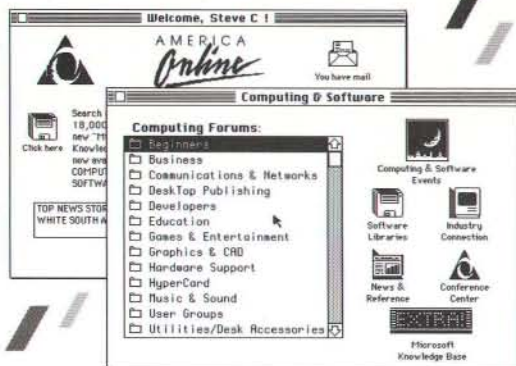
Circle 314 on reader service card

**NEC**



An Exclusive Connection!

# MACWORLD ONLINE



**Bringing you exciting, dynamic Macintosh news and information — directly from MACWORLD magazine:**

▲ The latest product announcements and reviews for smarter decision-making.

▲ Complete databases of Macintosh hardware developers, software publishers, and products.

▲ Up-to-date information on product versions and prices.

▲ Direct connection — talk to MACWORLD editors online.

PLUS, you'll enjoy software libraries with thousands of Macintosh public domain and shareware programs, live conferences with Macintosh industry leaders, and computing and software support on America Online.

**Order Your FREE  
America Online Kit Today!**

**1-800-227-6364, Ext. 5297**

**and discover  
MACWORLD  
on**

**AMERICA  
Online  
TODAY!**

Copyright © 1990 Quantum Computer Services, Inc.  
America Online is a service mark of Quantum Computer Services, Inc.  
Macintosh, Mac and MACWORLD are registered trademarks of Apple Computer Inc.

Systems' remarkable Proteus MIDI instrument that you can plug in to a Mac II.

## But Can You Afford It?

Going for broke in interactive multimedia can mean going broke. Indeed, until the prices come down—or until there is a new generation of TVs that incorporate some of the pieces—full-blown interactive multimedia will remain primarily confined to corporations and educational institutions.

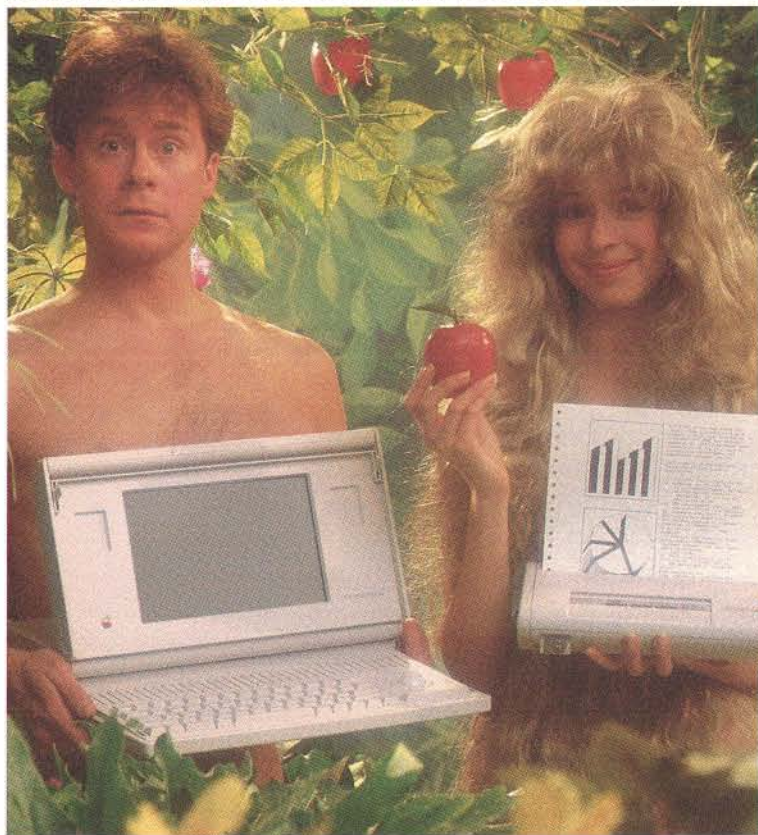
But the larger issue is the impact interactive multimedia will have on education. Will the ability to create, in essence, their own documentaries give students a better grasp of current events? Or will their technological wizardry merely distract them from deeper analysis or even distort their views of those events? What about events that took place before the inventions of sound recording and photography? And what about disciplines that don't benefit from computer graphics and old newsclips, such as literature? Can students really concentrate in an expository writing class if they're eagerly anticipating zooming around the Solar System in their next period? After a few years of nonlinear, TV-based education, will they be able to concentrate at all?

Educators and curriculum planners who seek the answers to those questions—and to brace themselves for the consequences—should definitely be in on the ground floor of interactive multimedia. Not only will they need to prepare for what appear to be tomorrow's teaching techniques, but also to shape those techniques into being more than technological diversions. Instead of asking, as some media critics have, How can we use television and the computer to shape the form and content of education? they should be asking, How can we use education to shape the form and content of television and the computer? ■

See *Where to Buy* for contact information.

*Jim Heid is a contributing editor of Macworld. His latest book is Macworld's Complete Mac Handbook (IDG Books Worldwide, 1991).*





**Don't use a Mac anywhere without a Kodak Diconix M150 plus printer. Especially now that it's more affordable than ever!**

Just think of all the things you can do if you have a Diconix printer with your Macintosh Portable or Classic computer. Those last-minute improvements on the presentation. The letters and reports that could be on their way right now. And, because it's so small and quiet, it works as well on the desktop as it does on the road.

It's all easy with the Kodak Diconix M150 plus printer. One of the world's smallest, lightest (3.1 lbs.), quietest printers, it's easy to carry. And it prints high-quality outline fonts, using Adobe Type Manager™ software, and presentation graphics as well. Go ahead, give in to temptation. Call for the name of your nearest dealer in the U.S. or Canada: 1 800 344-0006, Ext. 405.



Macintosh computer and new Kodak Diconix printer

# WHAT'S ONE WITHOUT THE OTHER? KODAK

*The new vision of Kodak*





# THE ONLY TAPE DRIVE THAT PUTS 25GB ON A SINGLE 8MM TAPE.



Do you wish you could find a backup system with enough capacity, speed, and sophistication to backup unattended?

Could you recreate a document from scratch in the time it takes you to restore it?

## FAST BACKUP, FAST RESTORE.

Introducing the CY-8500, the 8mm tape drive that gives you 25 GB on a single tape. And with transfer rates of up to 90 MB per minute, backup takes less time, frees resources, and makes frequent backup simple and convenient.

And that's not all. The CY-8500 offers fast file search capability. So you get the advantages of high capacity and

fast transfer rates plus the ability to locate and restore your files quickly – about 75 times faster than normal speed.

## CONFIGURATION FLEXIBILITY.

The state-of-the-art liquid crystal display gives you complete drive status information. Command under execution, transfer rate,

tape remaining, and ECC are presented in a clear easy-to-read format. By offering such features as data compression – for five times the storage capacity per tape – and data encryption – giving you data access control – the CY-8500 adapts to your company's growing needs. We'll adapt to your site requirements

too, with rack mounting options and cable lengths of up to 80 feet.

## PROVEN TECHNOLOGY.

Best of all, the CY-8500 offers peace of mind. 8mm helical scan technology, designed for data recording, gives you demonstrated performance and reliability. Not an adaptation of an audio recording format.

The CY-8500 is part of a complete family of tape backup products that range in capacity from the 150 MB ¼" cartridge streamer to the 2 TB cartridge handling system. All backed up by our in-house technical support group and 12-month warranty. For more information on how you can enjoy the best value in tape backup, call today at 804/873-0900.

CONTEMPORARY  
**CYBERNETICS**  
*Group*

## TRUE "PLUG-AND-PLAY" COMPATIBILITY WITH:

Alliant	DEC Unibus	PC 386/ix
Alpha Micro	Gould	PC MS-DOS
Altos	HP	PC
Apollo	IBM AS/400	Xenix/Unix
Arix	IBM Mainframe	Pertec
AT&T	IBM RISC/6000	Plexus
Basic-4	IBM RT	Prime
Concurrent	IBM S/38	Pyramid
Convergent	Macintosh	Sequent
DataGeneral	McDonnell	Silicon
DEC 3100	Douglas	Graphics
DEC BI-Bus	NCR	Sun
DEC HSC	Novell	Unisys
DEC Q-Bus	OS/2	Wang
DEC TU/TA81	PS/2	and more



# Insights on PixelPaint Professional

ART LESSONS FOR PIXELPAINT PROFESSIONALS (AND AMATEURS)

S

BY ERFERT FENTON

uperMac's PixelPaint has progressed to the point where it feels more like paint than pixels. The original PixelPaint was a well-crafted 8-bit paint program that offered digital analogs of artists' tools such as brushes and pens. PixelPaint

Professional 1.0 added amenities such as masking, antialiasing, spline curves, and transparency adjustment—plus 16 million colors. PixelPaint Professional 2.0 (due to ship in late March) comes even closer to simulating real-world painting.

The following tips apply to PixelPaint Professional versions 1.0 and 1.01, except for the PixelPaper tip, which applies to 2.0. Although you can use PixelPaint Professional with an 8-bit board, most of these tips require the program to be running in 24-bit mode. I'd like to thank Claire Barry, Tim Gray, and Bill Leasure at SuperMac for their help, as well as artists David Burwinkel and Mark Weissman.

## Smooth That Text

If you've ever typed text in PixelPaint Pro, you've probably noticed that characters look better on screen when the program's antialiasing feature—which smooths jagged edges by adding pixels of intermediate colors—is turned on. (You can tell antialiasing is turned on when the boxed diagonal line in the lower left-hand corner of the palette is smooth instead of jagged.) What you might not realize, however, is that you can take advantage of scalable PostScript fonts to create good-looking text at virtually any size, even though PixelPaint Pro is a bitmapped paint program, not a PostScript draw program. How? Adobe



*Missing Pieces* was created by artist Mark Weissman using digitized family photographs and PixelPaint Pro.

Type Manager uses information in a PostScript font's printer font file to scale text on screen; install ATM and the appropriate screen and printer fonts, and you won't have to rely on the limited number of sizes offered by screen fonts. Use ATM's scaling in conjunction with PixelPaint Pro's antialiasing to create beautiful text for slides or printed artwork. (Note: ATM works only with Type 1 PostScript fonts, a technology formerly the exclusive domain of Adobe and its licensees. If you're willing to spend a bit more on utilities, you can use Altsys's Metamorphosis or Image Club's Evolution to convert Type 3 fonts to Type 1 format.)

## Neon Text

PixelPaint Pro lets you create shapes that glow like neon. Here is a way to add that neon shimmer to typed text.

1. Open a new document and set the background color to black.
2. Make sure that antialiasing is selected.

3. Double-click on the eraser tool to fill the background with black.

4. Select the foreground color.

5. Click on the text tool, and select a font and size from the Text menu; for best results use a font size of at least 200 points. Type a word or phrase. (Remember, with ATM and a PostScript printer font installed, you can create smooth text

at large sizes.) Since PixelPaint Pro doesn't offer kerning, you use the lasso tool to adjust letterspacing.

6. Choose a blend color that's the same hue as, but lighter than, the foreground color.

7. Select Fill Effects from the Options menu, and configure the options as follows: Method: Shapeburst; Style: Standard; Using: True Colors; Speed: Constant; Respect To: Object. Leave the other settings as they are.

8. Hold down the ⌘ key and select the first letter by clicking on it with the lasso.

9. From the Effects menu, select Apply Fill Effect. The letter will fill with (continues)





**FLUORESCENT PAINT** Use a combination of PixelPaint Pro's Fill effect and airbrush tool to add a neon glow to any font.

a blend that's lighter in the center, giving it a glowing look. Repeat the procedure for each letter.

10. If you wish, select a foreground color that's a lighter version of the blend color and use the airbrush tool (with the Centered option selected) to trace and enhance the glow in the center of each letter. For best results, use a relatively small airbrush tip (10 or so, depending on font size). Choose the Polygon option from the Airbrush menu, and follow the glow in the center of each letter.

11. Surround the entire word or phrase with the marquee tool, and apply Smoothing from the Effects menu to simulate the out-of-focus appearance of real neon tubes. The more times you apply smoothing, the fuzzier the letters become (see "Fluorescent Paint").

## Make Your Own Paper

Many a traditional artist knows the joy of applying watercolor paint, charcoal, or chalk to a piece of paper and seeing the texture of the paper show through. With PixelPaint Professional 2.0, you can approximate the look and feel of textured paper. The program comes with four varieties of PixelPaper, and you can make your own by following these steps:

1. If you have access to a scanner, scan a piece of paper or cloth that has a visible pattern or texture. Save the file. Paste the scanned image into PixelPaint Pro's Paint layer.

If you don't have a scanner, you can use PixelPaint Pro's painting tools to make a pattern in the Paint layer. Experiment with effects like Emboss, Sprinkle, or Diffuse to make your pattern more paperlike.

2. Place the pointer on the Mask button and choose Mask Only from the pop-up menu that appears.

3. Choose Copy Luminance to Mask from the Mask menu.

4. Place the pointer on the Mask button again and select Paint Only from the pop-up menu to return to the Paint layer. Double-click on the eraser tool to erase the original scanned image, leaving only the mask.

5. You can return to the Mask Only layer and edit the texture of the paper with PixelPaint Pro's brightness and contrast controls via the Edit menu.

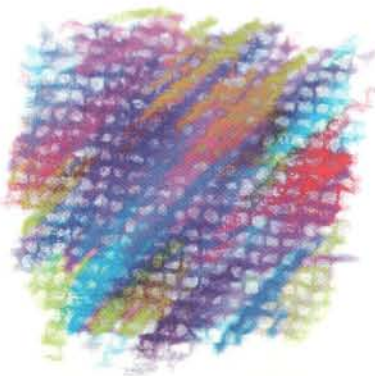
To make the texture appear, press the Mask button and select Use Mask. Then use the paper with tools such as the charcoal, airbrush, or paintbrush (see "Custom PixelPaper").

## Text on a Background

If you plan to place text over an object that has been filled with a blend of colors using the Fill command, make sure you fill the object first, before typing the text. If you type the text first and then fill the object, the open portions of letters such as *o* and *e* appear in the selected background color rather than picking up the blended fill.

## Airbrush Adjustment

Rather than periodically adjusting the airbrush tool's flow in PixelPaint Pro's Airbrush Properties dialog box, you might find it quicker to simply slide the Transparency Selector bar back and forth as you use the airbrush. If you frequently adjust the tool's flow rate, you'll find that this technique saves you many a trip to the Airbrush Properties box.



**CUSTOM PIXELPAPER** PixelPaint Professional 2.0's masking feature enables you to create custom "paper" that simulates the texture of the real thing.

## Picky Paint

If you combine scanned photos in PixelPaint Pro, you'll notice a stark outline when you paste one scanned image on top of another. A little anti-aliasing is in order here to blur the outline and make the image appear more photolike. But many PixelPaint artists find that both the water drop and finger tools blur the edges too much, even when set to a small size. If you are the patient sort, you can antialias an object by hand. Two methods are described here. In the first technique, you alternate between the pencil tool and the dropper tool to place transparent versions of colors on either side of the sharp border between the two objects, thus softening the border.

1. Paste one scanned image on top of another.

2. Slide the Transparency Selector bar almost all the way to the left, so that it is set for around 94 or 95 percent transparency.

3. Zoom in twice so you can easily work pixel by pixel. Move to a position on the sharp boundary between the pasted image and the background image.

4. Select the dropper tool. Work right along the border where the pasted foreground image meets the background image. From the background image, select a color that adjoins the pasted image's ragged edge.

5. Select the pencil tool (pressing the period key is a tool-selection shortcut). Click just inside the pasted object's border. The transparent color you picked up from the background blends with the color you click on, softening the edge between the two objects.

6. Press ⌘-tilde (⌘-) to toggle to the dropper, and repeat the procedure as necessary along the objects' border. You'll get subtle blending that would be impossible to achieve using the standard tools.

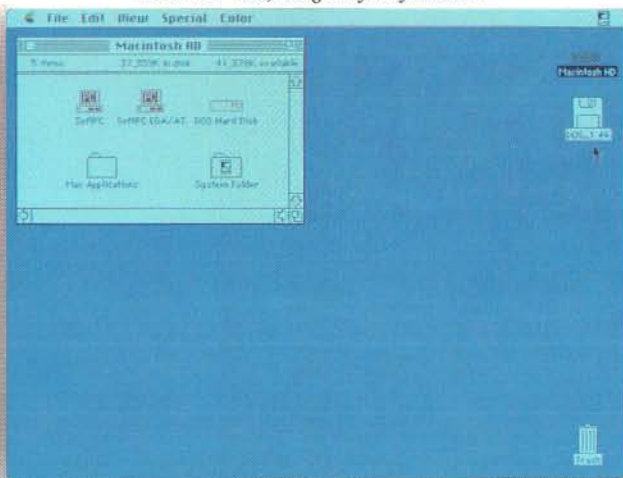
If the preceding method is too tedious for you, try the following trick, which is easier but offers somewhat less control.

1. As in the previous tip, zoom in on the border between two images.

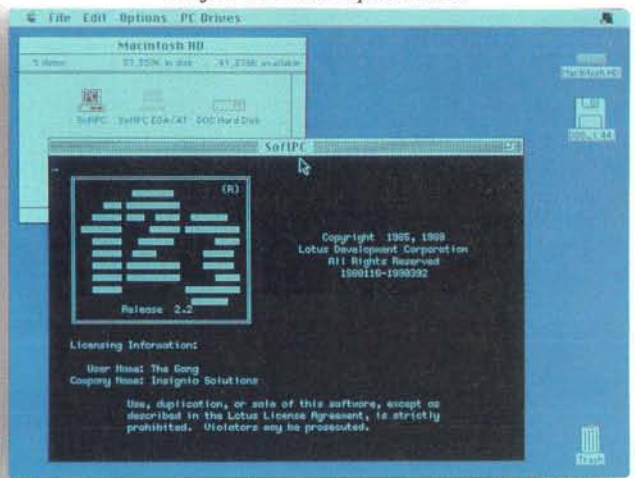
2. Select the lasso tool, and choose Polygon from the Lasso menu. (continues)



The floppy disk icon "DOS-1.44M" is actually an MS-DOS® disk, brought to you by AccessPC™



Shown: Lotus® 1-2-3® release 2.2, running in SoftPC® with EGA/AT Option Module™



# Click, It's A MAC.

# Click Click, It's A MAC And A PC.

Load SoftPC, click twice, and you've got a window wide open to the entire MS-DOS world. Everything a Mac can do plus everything a PC can do, in one machine.

Whether you're a Macintosh user who needs access to PC software and data, or a PC user who wants to go Macintosh without losing PC compatibility, you can have it all with Insignia's best-selling software solutions.

*SoftPC* is a software emulation precise enough to run the toughest PC applications—Norton Utilities, Lotus 1-2-3, Harvard Graphics, AutoCad, even custom development programs. You get *complete* XT or AT compatibility for the SE/30, Macintosh II family and the Macintosh Portable.

Add an *EGA/AT Option Module*, and get vibrant EGA color compatibility, LIM expanded memory and math coprocessor support.

New *AccessPC* lets you use PC and PS/2 disks just like Mac disks. Now you can move and view PC file and disk icons—even in locked or full disks!—format DOS disks, launch Mac applications and much more.

For more information and the name of a SoftPC dealer near you, call Insignia at 800-848-7677 (U.S. only) or 408-522-7600 (outside U.S.).

**Insignia**™

Insignia Solutions, Inc. 254 San Geronimo Way, Sunnyvale, CA 94086. Fax: 408-733-9541. We give a SoftPC (retail \$399) or AccessPC program (retail \$129) daily to a caller selected at random. SoftPC is a registered trademark and AccessPC is a trademark of Insignia Solutions, Inc. Other product names are trademarks or registered trademarks of their respective owners.

Circle 72 on reader service card



# Teach Your Kids a Lesson They'll Never Forget

**W**ith all the benefits of fitness — stronger heart and lungs, reduced stress, increased

energy — isn't it time you started a regular exercise

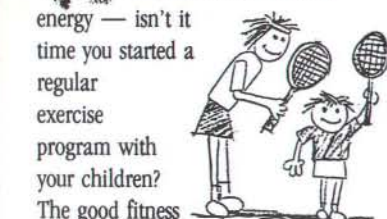
program with your children?

The good fitness habits they develop now could give them a healthier, happier lifetime —

a gift they'll appreciate long after their toys and games are gone. Just find those physical fitness activities you

all enjoy and

exercise at least three times each week. For yourself and those you love, start today. Make fitness a family affair.



For more information write:  
**FITNESS, Dept. 201**  
**Washington, D.C.**  
**20001**

*Fitness is feeling GREAT!*



The President's Council on  
Physical Fitness and Sports

## INSIGHTS

## HOW TO



**TRANSIMAGE TRANSPARENCY** PixelPaint Pro's Copy Using Transparency command lets you overlay transparent images in digitized photo collages and other types of paintings.

3. Lasso an area that contains the borderline and a pixel or two on each side of it.

4. Apply the Smooth effect from the Effects menu. Voilà! Precision antialiasing.

### A Veil of Transparency

When he was creating his painting *Missing Pieces* from a batch of digitized family photos, artist Mark Weissman wanted the image of his mother's bridal veil to overlap another photo to help tie the images together (see the painting on the first page of this article). To do so, he lassoed the veil in the digitized wedding shot and moved it to a blank part of the document, where he touched it up a bit. He then set the Transparency Selec-

tor to 15 percent, lassoed the veil, and chose Copy Using Transparency from the Edit menu. He assembled the additional elements of the collage, and then pasted the veil back into its original position in the composite painting, and the background showed through the semitransparent veil (see "Transimage Transparency"). You can use this effect to achieve different levels of transparency in an image.

### The Thin White Line

If you paste a PixelPaint Professional image into a presentation program like Microsoft PowerPoint or Aldus Persuasion, you might get an unpleasant surprise when you have slides made. Although the image looks fine on screen, an unsightly white border sometimes appears around objects when you have a slide made using a film recorder. To abolish that outline, use a background color in PixelPaint Pro that closely matches the background color you'll be using in the presentation program. Then lasso the image (use the lasso's Autoslip option if the background has more than one color) and paste it into the presentation application.

### One Sick Trick

Stroll up to a cohort who has a PixelPaint Pro 1.01 document on screen. Say something to the effect of, "Hmm, your Mac feels a little warm to me." Then surreptitiously press the colon key, and watch the fun begin (or watch your cohort writhe in abject horror, depending on his or her temperament). Press the mouse button to return to normalcy. (Warning: Kids, don't try this trick on anyone who doesn't have a good sense of humor.)

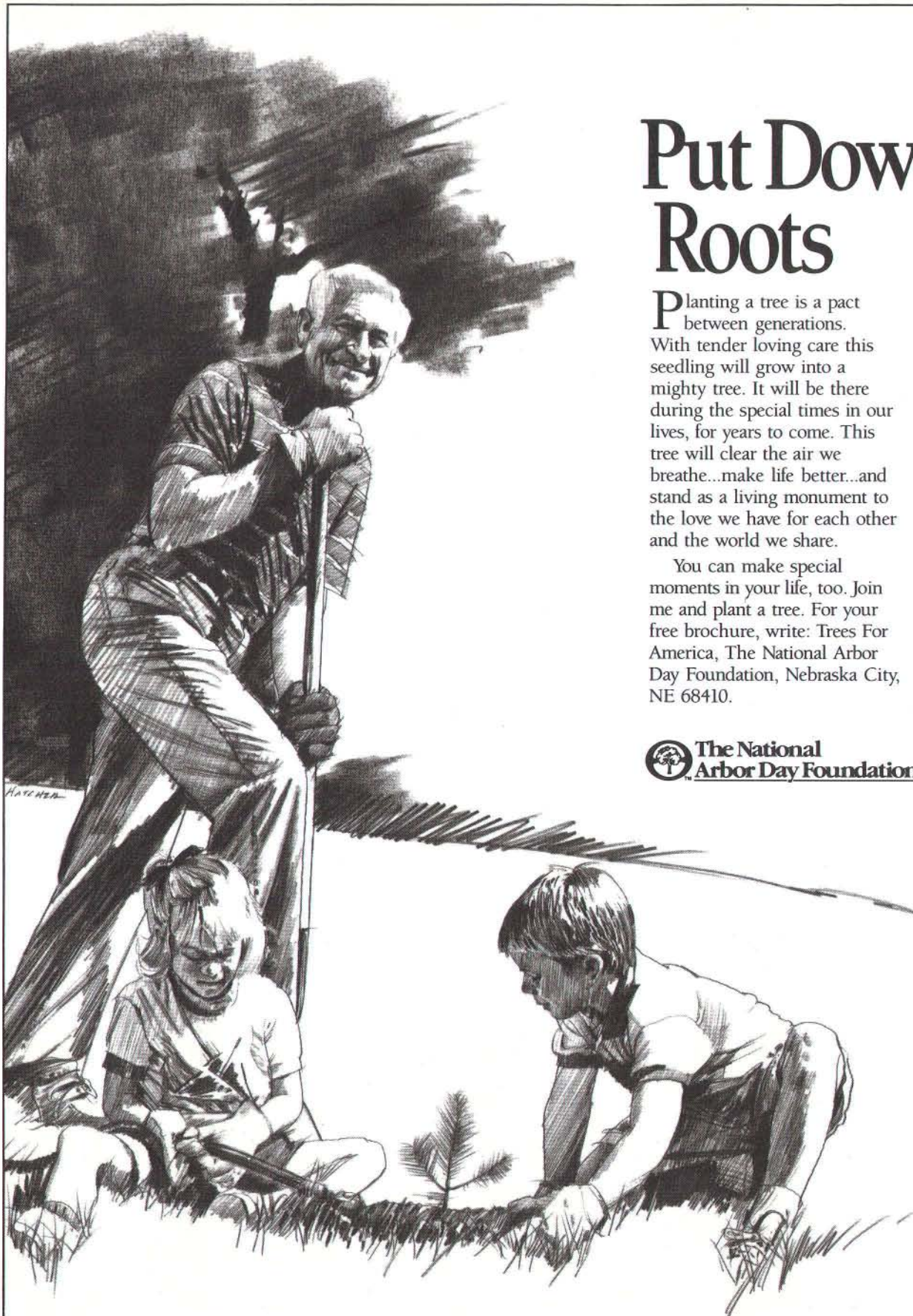
### Sharing the Wealth

If you've found a tip or shortcut not mentioned here, spread the word to other *Macworld* readers by sending it to *Quick Tips*, *Macworld*, 501 Second St., San Francisco, CA 94107. **M**

See *Where to Buy* for contact information.

*Erfert Fenton is actually a bug-eyed alien from another galaxy, but is currently masquerading as a Macworld contributing editor.*





# Put Down Roots

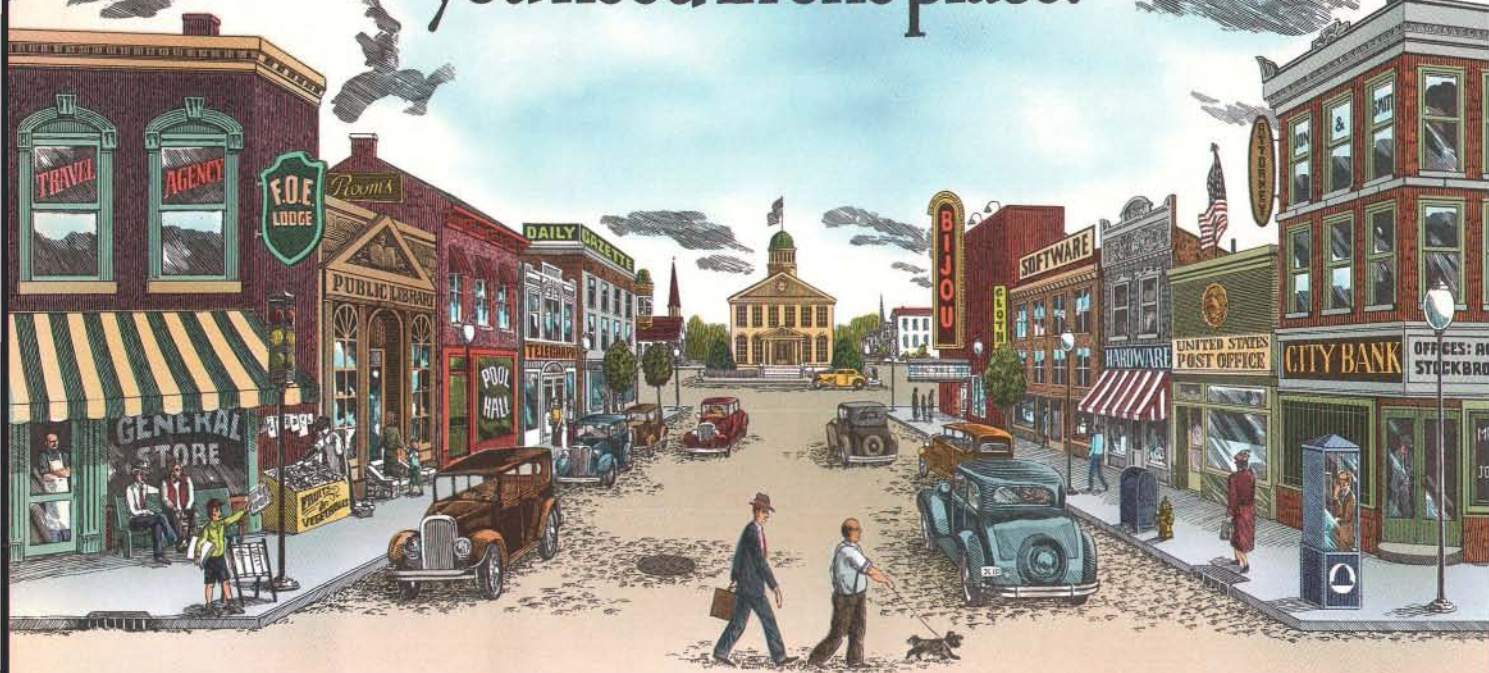
Planting a tree is a pact between generations. With tender loving care this seedling will grow into a mighty tree. It will be there during the special times in our lives, for years to come. This tree will clear the air we breathe...make life better...and stand as a living monument to the love we have for each other and the world we share.

You can make special moments in your life, too. Join me and plant a tree. For your free brochure, write: Trees For America, The National Arbor Day Foundation, Nebraska City, NE 68410.

 **The National  
Arbor Day Foundation**



# There's nothing new about having everything you need in one place.

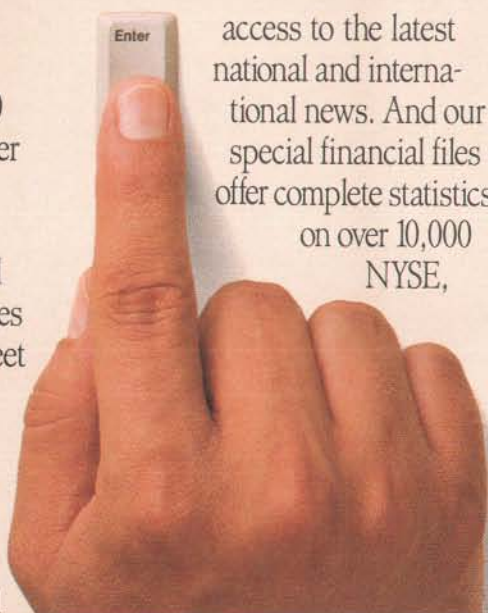


## With CompuServe, it's all at your fingertips.

When you become a member of CompuServe, you join a vital, active community of over 750,000 friends and neighbors from all over the world.

**Small-town friendly.** We keep in touch with electronic mail and faxes, and by posting messages on our bulletin boards. We even meet in forums to discuss everything from science fiction to sharing software, and to get invaluable personal computer software and hardware support. And that's one of the best things about small towns: people helping people.

**Big-city opportunities.** But we can also shop coast-to-coast at hundreds of nationally known stores, and take advantage of a world-class library. We have



access to the latest national and international news. And our special financial files offer complete statistics on over 10,000 NYSE,

AMEX, and OTC securities.

We can even trade online with our local discount brokers.

**And, just for fun . . .** We've also got games — everything from trivia to TV-style game shows with

live entertainment to interactive space and fantasy adventures.

We've got airline schedules, so you can check out the bargains and book your own flights online. We even have listings from over 35,000 hotels.

**It's not hard to get here.** To get to CompuServe, all you need is a computer and a modem. We'll send you everything else, including a \$25.00 Usage Credit. In most places you'll be able to go online with a local phone call.

To buy a CompuServe Membership Kit, see your nearest computer dealer. To receive our informative brochure or to order direct, call today.

**CompuServe**  
800 848-8199



# UPDATES

Here's our list of some of the latest versions of Mac software that were announced at the time we went to press.

The first price is the upgrade cost for registered owners; the second price is the current list price. (Send your update announcements to Updates, Macworld, 501 Second St., San Francisco, CA 94107.)

**Aldus FreeHand 3.0** includes features for on-screen palettes that list the line and fill colors, graphic styles, and layers that can be used in producing illustrations. Has improved text con-

trols that enable you to convert characters to editable outlines, automatically position text around the top and bottom of an ellipse, and create vertical text; gives users the choice of working in preview or keyline mode; and includes a color separator that produces full process-color separations for all parts of an illustration. Aldus, 206/628-6674. Contact vendor for update price; \$495 new.

**Microsoft Excel 3.0** integrates outlining to enable users to collapse or expand large or complex worksheets to view

them at different levels of detail. Has a consolidate feature that lets users combine and summarize worksheets in memory or on disk, regardless of the worksheets' structure or format. Microsoft, 206/882-8080. Contact vendor for update price; \$495 new.

**Stuffit Deluxe 2.0** runs faster than the previous version, has the ability to create self-unstuffing archives, contains a Save as command, and includes text and MacPaint optimizers. Aladdin Systems, 408/685-9175. Free; \$99.95. **M**

## PRODUCT UPDATES

Product	V.	Req.	Rev.	Price
1st Aid Kit ★	2.8	512K/3.0	*	
4th Dimension	2.1	1MB/6.0.2		Free
Aatrix CheckWriter II ★	2.01	512K/4.1		\$10
Aatrix TimeCard	2.0	512K/4.2		Free
Accountant Inc., Professional	1.0.4	1MB/6.0.3	9/90	\$19.95
ACCPAC Bedford	1.1	1MB/5.1		\$50
Simply Accounting				
AccuText	2.0	4MB/6.0.2	*	
Address Book	2.0	1MB/6.0.2	6/90	\$25
Adobe Illustrator	3.0	2MB/6.0.3	2/91	*
Adobe Type Manager ★	2.0	1MB/6.0.2		Free
AdWriter	2.0	1MB/6.0		Free
After Dark	2.0	512K/4.1	5/91	*
AgfaType	2.0	2MB/6.0.2		Free
Alchemy	1.1	1MB/6.0	10/90	\$25
Aldus FreeHand	3.0	1MB/6.0.3	*	
Aldus PageMaker	4.0	1MB/4.1	9/90	\$150
Aldus Persuasion	2.0	1MB/6.0	*	
AmPack Plus ★	4.2.2	512K/3.2		\$29.95
Analog Connection	3.0	1MB/5.0		\$50
WorkBench				
AntiToxin	1.3	1MB/6.0.2		\$15
Aperture	1.7	2MB/6.0.3	7/90	*
AppleShare File Server	2.0	512K/3.2	*	
ArchText	2.0	1MB/6.0.2		Free
Aristotle's Politics	2.0	2MB/6.0.3		Free
The Art Importer	2.0	1MB/6.0		\$20
ArtRoom	3.0	512K/3.2		\$199
<b>Ashlar Vellum</b>	<b>2.0</b>	<b>4MB/6.0.2</b>	<b>6/90</b>	<b>\$95</b>
AutoCalc	2.0	1MB/6.0		\$95
AutoSave II	2.0	512K/4.2	7/90	*
A/UX	2.0	4MB/6.0.5	*	
BackFax	1.5	1MB/6.0.3	7/90	\$7.50
<b>BackMatic</b>	<b>2.0</b>	<b>1MB/4.2</b>	*	
Back to Basics: Professional	2.0	512K/3.2		\$75
Bitstream Typeface Library	2.0	1MB/6.0	*	

**Bold** = first time the product is being listed.

★ = minor update.

Product	V.	Req.	Rev.	Price
Blueprint	2.0	1MB/6.0	*	
Bomber	2.0	1MB/6.0	*	
Bridge	6.0	512K/3.2		\$17
Business FileVision ★	1.5	1MB/6.0.2	*	
Business Sense ★	1.2	1MB/6.0	*	
Business Session ★	3.2	512K/3.2		Free
CA-Cricket Presents	2.0.1	1MB/6.0	*	
Calculator	2.06	512K/3.2		\$25
Construction Set ★				
CanOpener	1.1	512K/3.0		Free
Canvas	2.1	1MB/6.0	*	
Capture	4.0	1MB/6.0	*	\$30
Central System Manager	2.1	1MB/5.0X	*	
Chameleon	3.0	512K/3.2		Free
Chemintosh II		1MB/6.0.2		Free
ChromaScan	2.0	6MB/6.0.5	*	
Claris CAD	2.0	2MB/6.0		\$79
Codecheck	2.0	1MB/6.0		Free
Colorset ★	1.5	1MB/6.0	6/90	Free
CompileIt	1.5	1MB/6.0.2		\$30
CompuServe Navigator	3.0	512K/3.2	12/90	*
ConcertWare	5.1	512K/4.2		\$35
Control II	1.1	2MB/6.0.4		Free
CopyFlow	2.0	2MB/6.0	6/90	Free
Correct Grammar	2.0	1MB/4.2	9/90	\$29.95
Crystal Ball	2.0	512/4.2		\$75
Cue	3.0	1MB/6.0.3	*	
DacEasy Light	2.0	1MB/6.0.3	*	
Checkbook Accounting				
Data Desk	3.0	512K/4.0.2	6/90	\$125
DataMerge	2.0	512K/3.2		Free
dBase Mac ★	1.01	1MB/4.1		Free
Deluxe Music	2.5	512K/6.0.2	*	
Construction Set				
<b>DesignStudio</b>	<b>2.0</b>	<b>1MB/6.0</b>	*	
DeskPaint ★	3.0	1MB/4.2		Free
Developer Stack	3.0	1MB/6.0		\$15
DiagramMaker	2.0	1MB/6.0.2		\$35

**Req.** = min. RAM and system software required.

**Rev.** = last time (in past year) reviewed this or an earlier version.

Product	V.	Req.	Rev.	Price
Digital Darkroom	3.0	1MB/6.0	*	
DiskDoublor	3.0	1MB/6.0.2	12/90	Free
DiskExpress II	2.04	1MB/6.0	11/90	*
DiskFit and	2.0	1MB/6.0		*
Network DiskFit				
DiskTop	4.0	1MB/6.0	7/90	*
Display AdBuilder	1.1	1MB/6.0.3		*
DocuComp	1.5	512K/3.0	12/90	\$19.95
Dollars and Sense	4.1	512K/3.2	*	
Double Helix	3.5	1MB/6.0	*	
DragonWave	2.0	1MB/6.0.3		Free
Dreams	1.1	1MB/6.0.2	*	
DynaPerspective	2.0	2MB/6.0.4		Free
DynoDex ★	1.21	1MB/6.0	6/90	Free
Easy Color Paint	2.0	1MB/6.0.2	9/90	*
Empower II ★	3.03	1MB/4.2		Free
EndLink	1.1	512K/3.2		Free
EndNote Plus		512K/3.2		\$49
Exodus	2.0	1MB/6.0		\$50
Extender GrafPak	3.0	1MB/6.0.2		\$30
Falcon ★	2.2.1	1MB/3.2		\$3
Fastback II	2.1	512K/4.1		\$30
Fast Forms	2.0	1MB/6.0	11/90	\$25
FastLabel	2.0	1MB/6.0		\$36
FastTrack	1.5	512K/5.5		\$20
FaxGate	1.1	1MB/6.0		Free
Ferrari Grand Prix ★	1.6	512K/3.2		\$10
FetchIt	2.0	512K/6.0.1	*	
FileMaker Pro	1.0	1MB/4.2	2/91	*
Filevision IV	1.1	1MB/4.2		\$15
FilmMaker	2.0	5MB/6.0.3	3/91	*
Finale	2.6	1MB/6.0.2		Free
Financial Analysis	3.0	512K/3.0	*	
Findswell	2.01	512K/3.2	*	
Fontographer	3.1	1MB/4.2	*	
FontShare	2.0	1MB/6.0		Free
FormsProgrammer ★	2.03	1MB/6.0.2		\$15

(continues)

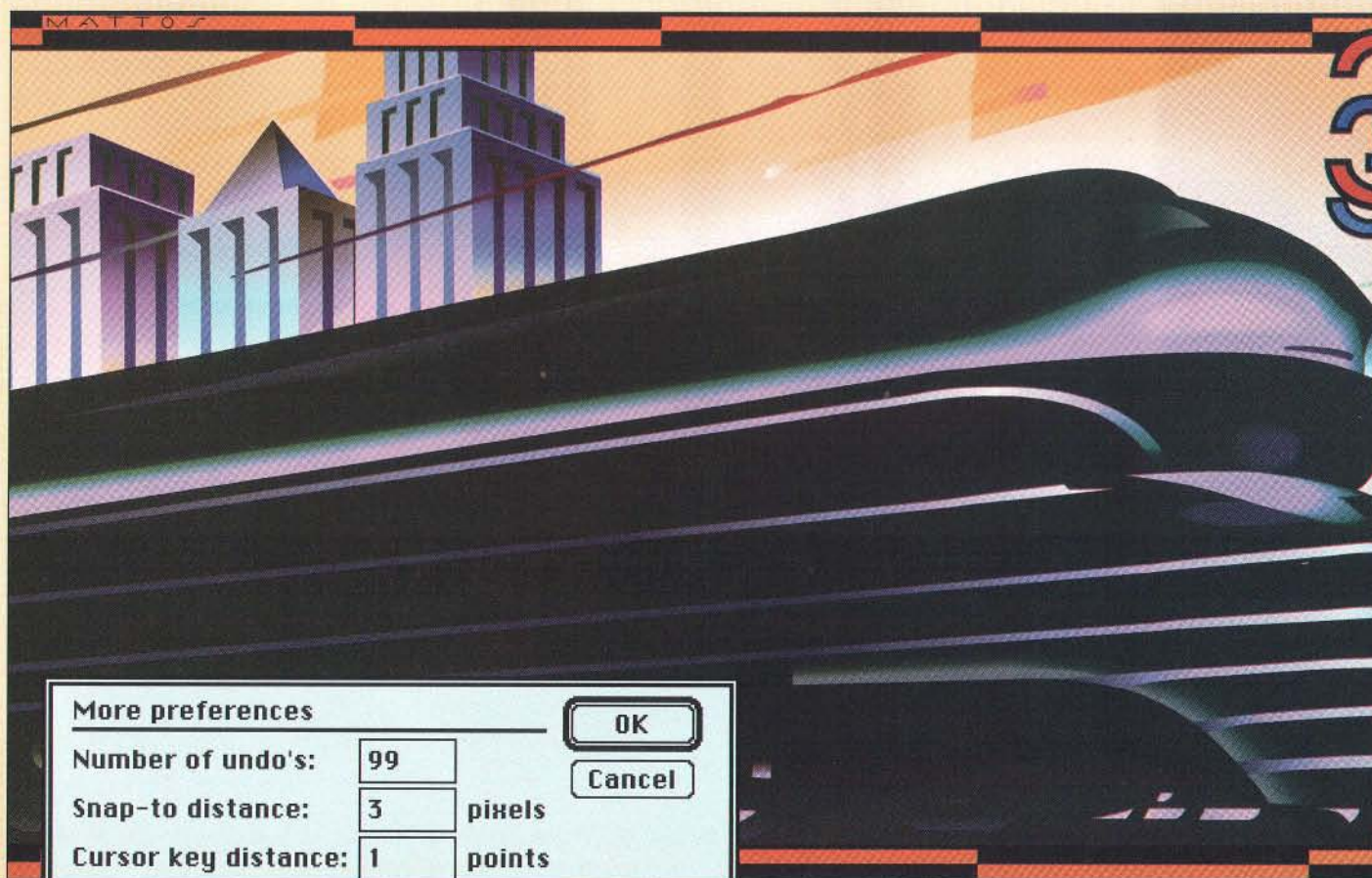
**Price** = cost for update to registered owners.

\* = contact your dealer for update policy.



# PRODUCT UPDATES

Product	V.	Req.	Rev.	Price	Product	V.	Req.	Rev.	Price	Product	V.	Req.	Rev.	Price
FountainView	3.0	1MB/6.0		\$15	HyperEngine	2.0	1MB/6.0.3		\$25	Language Systems	2.1	2MB/6.0.4		Free
FoxBase+/Mac ★	2.10	1MB/6.0		\$75	Developer's Tool					Fortran ★				
Freedom of Press ★	2.2	1MB/6.0		Free	HyperLibrary	2.0	1MB/5.0		*	LapLink Mac III	3.0	512K/2.0	7/90	*
FreeFlow	3.0	1MB/6.0.3		Free	HyperTools	2.0	2MB/6.0.2		\$20	LaserPaint Color II ★	1.02	1MB/6.0.3		Free
Full Impact ★	2.0	1MB/6.0		\$50	HyperWindows ★	1.2	1MB/6.0.2		\$20	LetraStudio	1.5	2MB/6.0		\$45
FullWrite Professional	1.5	2MB/6.0.2		*	Icon-It	2.0	1MB/6.0.2	9/90	\$29	LetrTuck+	2.0	512K/3.2		\$20
Gamblin' Times	3.0	1MB/6.0	3/91	\$10	iX Forms Designer	1.1	1MB/6.0	9/90	Free	Lightspeed Color	2.0	1MB/6.0		*
GeoQuery	2.0	1MB/6.0	10/90	*	ImageStudio	1.5	1MB/6.0		\$99	Layout System				
Gofer	2.0	1MB/4.1		\$25	ImageWriter LQ	2.0	512K/3.2		Free	Mac86	2.0	1MB/6.0.2		\$10
GQL	2.0	1MB/5.0		*	Print Driver ★					Mac286	2.0	1MB/6.0.2		*
Grammatik Mac	2.0	1MB/5.0	9/90	Free	In-CAD	2.0	2MB/6.0		*	Mac3270	2.0	1MB/6.0.3		*
Great Gantt	1.3	1MB/6.0	12/90	Free	InfoLogic Envelope ★	1.1c	512KE/4.0		\$5	MacAnalyst	2.0	2MB/6.0		\$125
Great Plains	5.35	1MB/6.0		*	Insight Expert	2.2	1MB/6.0		*	MacArchitition	4.0	2MB/6.0.3		Free
Accounting Series					Accounts Payable					MacAtlas Paint	2.0	512K/3.2		\$35
HandOff II	1.1	1MB/6.0.2		Free	Insight Expert	2.2	1MB/6.0.2		*	MacClassAds	4.0	1MB/6.0		*
Handwriting Analyst ★	3.1	512K/3.2		\$24.95	Accounts Receivable					MacConcept	3.0	1MB/6.0.3		*
Hard Disk Util	3.0	1MB/6.0		\$65	Insight Expert	2.2	1MB/4.2		\$99	MacDesigner	3.0	2MB/6.0		\$125
Help DA	3.0	1MB/6.0		Free	General Ledger					MacDraft	2.1	1MB/6.0.2	12/90	*
HFS Backup	3.0	512K/3.2		\$35	Inspiration	3.0	1MB/4.2	11/90	*	MacDraw II	1.1	1MB/6.0		*
HydroMac	2.0	1MB/6.0		*	Instant-Expert Plus	3.0	1MB/5.0		Free	MacEnvelope	5.0	512KE/3.2		\$25
HyperAnimator ★	1.5	1MB/6.0.3		\$29.95	JetLink Express	2.0	1MB/6.0		\$30	MacEnvelope Plus	2.0	512KE/3.2		\$50
HyperCard	2.0	1MB/6.0.3		\$49	KidsTime ★	1.2	512K/3.2		\$15	Macintosh Yellow Pages	1.1	1MB/6.0		*
HyperDA ★	1.2	512K/3.2		\$10	KiwiEnvelopes	3.0	512KE/4.1		\$10	MacFalcon	2.1	1MB/6.0.3		*





Product	V.	Req.	Rev.	Price	Product	V.	Req.	Rev.	Price	Product	V.	Req.	Rev.	Price
MacFlow ★	3.1.5	1MB/6.0.3		Free	Managing Your Money	4.0	1MB/6.0.3	6/90	*	MindWrite ★	2.1	512K/4.2		*
MacFortran	2.4	512K/4.2		*	MapGrafix	2.0	4MB/6.0.3		Free	MiniCad Plus	3.0	1MB/6.0		*
MacFortran/020	2.4	512K/4.2		*	Maple	4.2.1	1MB/6.0		*	MiniDraw	4.0	512K/4.2		\$17
MacFortran for MPW	1.1	2MB/6.0.2		Free	MarcoPolo	1.1	1MB/6.0		Free	MockPackage Plus Utilities	4.4	512K/3.2		\$15
MacInUse	3.0	1MB/6.0		\$30	MarketMaster	11+	1MB/6.0.3		\$25	ModelShop II		1MB/6.0.2		\$150
MacLinkPlus/PC	4.5	1MB/6.0.2		*	MarkUp	1.02	1MB/6.0		Free	Modern Artist	2.0	2MB/6.0.2		\$150
MacLinkPlus/Wang VS	4.0	512K/3.2		\$45	Master Tracks Pro 4	4.12	1MB/4.1	6/90	\$45	Monte Carlo	2.2	1MB/6.0.3		\$60
MacLotto	2.1	512K/4.0		\$10	MathCAD ★	2.06	1MB/6.0.2		Free	More ★	3	1MB/4.1	12/90	*
MacMainFrame 3270/CUT	2.1	2.5MB/6.0.2		\$100	Mathematica	2.0	1MB/6.0		*	MSFL: Pro League Football	2.0	1MB/6.0		*
MacMoney	3.5	512K/4.0		\$12	MathType	2.1	512K/6.0.2		*	Multi-Ad Creator	2.2	2MB/6.0.3		*
MacPhonebook	3.0	1MB/6.0		*	Matlab	1.2	1MB/3.0		*	MultiClip	2.0	512K/6.0.2	8/90	*
MacProject II	2.1	1MB/6.0		Free	MaxPage ★	1.2	512K/3.2		Free	MultiLedger ★	1.1	512K/3.2		Free
MacProof ★	3.2.1	1MB/6.0.2		\$30	McClint	2.0	1MB/4.2		\$25	MusicProse	2.1	1MB/6.0		Free
MacRascal	2.0	2MB/4.1		\$25	McCPrint	2.1	512K/4.2		\$25	Music Publisher	2.5	1MB/6.0		*
MacRecorder	2.0	512K/3.2		*	McMax	2.0	1MB/5.0		*	MyDiskLabeler III		1MB/6.0		\$25
MacroMind Director	2.0	2MB/6.0.2	10/90	\$100	MGMStation ★	2.5	512K/3.0		*	M.Y.O.B.	2.0	1MB/6.0		*
MacSafe II		512K/4.2	10/90	*	MicroPhone II	3.0	512K/4.2	7/90	*	MyTimeManager	2.0	1MB/6.0		*
MacSchedule	2.0	1MB/6.0		\$30	Microsoft Excel	3.0	1MB/6.0.2		*	Navigate	2.0	1MB/6.0		Free
MacSmarts	4.0	1MB/6.0		*	Microsoft File	2.0	512K/3.2		*	Nemesis Go Master	4.0	512K/4.1		*
MacTell	3.5	512K/3.0		*	Microsoft Mail	3.0	1MB/6.0.2		*	NetMinder Ethernet	1.2	2MB/6.0		*
MacTerminal	3.0	512K/3.2		\$65	Microsoft PowerPoint	2.01	1MB/6.0		Free	Network Bundle	3.0	512K/3.2	7/90	*
MacVision Video Digitizer	3.1	1MB/6.0.2		\$50	Microsoft Word	4.0	512K/3.2		*	for the Mac				
MacWrite II	1.1	1MB/6.0		Free	Microsoft Works	2.0	512K/6.0		*	(continues)				

## The best reason to buy new Aldus FreeHand over Illustrator is not for what it can do, but for what it can undo.



New Aldus FreeHand® 3.0 gives you more freedom to experiment. Because, unlike any other design and illustration software, Aldus FreeHand gives you "Undo" and "Redo" commands for up to 99 steps. With Adobe Illustrator® you only get one.

And that simply gives you more confidence to explore greater design options with Aldus FreeHand.

The new on-screen "Colors," "Styles," and "Layers" palettes also make it easy to experiment with different colors, lines, fills, and graphic styles with a quick click of the mouse.

And while you are experimenting, you'll appreciate its smoother and faster drawing abilities, as well as its enhanced text and graphic capabilities.

To receive a free brochure, call 800-333-2538, Dept. 2M.

To upgrade, call 206-628-2320. And find out everything new Aldus FreeHand 3.0 can do and undo for you.



Aldus FreeHand gives you the option of drawing in a color Preview mode (left) so you can see what you're doing. You can draw only in a keyline mode (right) with Illustrator.





# PRODUCT UPDATES

Product	V.	Req.	Rev.	Price	Product	V.	Req.	Rev.	Price	Product	V.	Req.	Rev.	Price
Network DiskFit	1.5	512K/4.1		\$30	QuickLock	2.0	512KE/3.2	10/90	Free	SuperLaserSpool	2.0.2	1MB/6.0		\$30
The NightWatch ★	1.03	512KE/3.2		*	QuickMail	2.2	512KE/3.2		\$95	SuperPaint	2.0	1MB/6.0.2		\$50
Nisus	3.04	1MB/6.0.2	2/91	Free	QuickShare	2.0	512KE/3.2		\$75	SuperSpool	5.0	512K/4.1		\$30
Now Utilities	2.0	1MB/6.0.2		\$25	QuickShot ★	2.1	1MB/4.2		\$5	Sybil	2.0	1MB/6.0	11/90	*
NuPaint ★	1.04	512K/3.2		Free	RagTime 3	3.04	2MB/6.0	8/90	\$150	Synchronicity	2.5	512KE/3.2		\$10
NuTools	1.2	1MB/6.0		*	Read-It OCR Personal	2.1	1MB/6.0.3		\$29	Systat	5.1	2MB/6.0		*
Nutrition Stack	2.0	1MB/6.0.2		\$20	Read-It OCR Professional	3.0	2MB/6.0.3		*	Teacher's Rollbook ★	2.2	512K/3.2		\$17.95
OmniPage ★	2.1	1MB/6.0.2		Free	ReadySetGo	4.5	1MB/6.0		*	Tempo II	1.02	1MB/4.2		*
Omni 3 Plus/Express	2.0	512KE/3.2		*	Real Estate Edge	2.0	1MB/6.0.3		Free	Tempo+ Tools ★	1.1	1MB/4.2		*
On Schedule	2.0	1MB/3.0		*	Rendezvous	2.5	512KE/4.1		\$15	Ternary Plot	3.0	512K/3.2		*
P51 Mustang Flight	2.80	512K/3.2		\$10	Reports ★	1.2	1MB/6.0		Free	TextPert ★	3.01	1MB/6.0		Free
Simulator					Retail Engine	3.0	1MB/6.0		*	TextScan	3.04	1MB/6.0		\$69.95
PacerLink	5.0	512K/5.0		*	Sales and Market	2.0	1MB/6.0		\$49	TGRAF-07/Mac	2.0	2MB/6.0		*
Panorama	1.5	1MB/4.2		\$29.95	Forecasting Toolkit					Theorist	1.1	1MB/6.0		*
Paper Keyboard	1.2	2MB/6.0.3		\$25	Sales Associate	1.10	1MB/6.0.3		Free	Think C	4.0	1MB/5.0		*
PEGASYS II	3.2	1MB/6.0.3		Free	SAM	2.0	1MB/6.0	2/91	\$29.95	Think Pascal	3.0	1MB/5.0	11/90	\$69
Performer Sequencer	3.6	1MB/6.0		*	ScanMan Model 32		1MB/6.0	10/90	Free	ThunderWorks	1.0.3	1MB/6.0.2		\$69
Personal Golf Stats	2.0	512K/3.2		Free	ScheduleMaker ★	3.01	1MB/6.0		\$25	Timbuktu	3.1	1MB/4.1	10/90	*
Personal Phone ★	1.1	1MB/6.0		*	ScreenSnap ★	2.2	1MB/4.2		*	Timbuktu/Remote	2.0	1MB/4.1		*
Personal Reference Catalog	2.0	1MB/6.0	10/90	\$10	ScriptEdit	2.0	1MB/6.0.4		\$25	TimeMinder	2.0	1MB/4.2		\$50
Phononet Liaison	3.0	1MB/4.2		\$75	Sentinel	2.2	1MB/6.0		\$30	Timeslips III	2.0	1MB/6.0.2		*
PhotoMac	1.5	2MB/6.0.3		\$75	Shanghai	2.0	1MB/6.0.2		\$13	TML Pascal II	3.0	1MB/5.0		\$79.95
PhotoMacEdit	1.5	2MB/6.0.3		\$30	Shortcut	1.5	1MB/6.0		Free	Trapeze ★	2.1	1MB/6.0		\$35
The Phrase Thesaurus	2.0	1MB/6.0		Free	SimMac	3.1	1MB/6.0.2		Free	TrueBASIC ★	2.02	1MB/6.0		Free
PICT Detective	2.0	512KE/6.0		\$20	SimpleSpan	2.5	512K/3.2		*	TrueForm ★	1.1	1MB/6.2		Free
PixelPaint	2.1	2MB/4.1		*	Smart Alarms &	3.1	1MB/6.0.2	12/90	\$25	TurboCASE	2.0	1MB/6.0		\$25
PixelPaint Pro	2.0	3MB/6.0.3		\$125	Appointment Diaries					Turbosynth	2.0	1MB/6.0.3		\$35
Plains & Simple ★	1.06	1MB/3.2		*	Smart Alarms & Multi-	3.01	1MB/6.0.2	12/90	*	Typeface Library	1.5	1MB/6.0.3		*
PostShow	1.1	1MB/6.0		\$35	User Appointment Diaries					TypeStyler	1.5	1MB/4.1	7/90	*
PowerDraw	3.0	1MB/6.0		*	SmartForm Assistant	1.1	1MB/6.0		Free	UNITize ★	1.3	512KE/3.2		\$20
PowerStation ★	2.5.2	512K/4.1		Free	SmartForm Designer	1.1	1MB/6.0		Free	UpBeat	2.01	1MB/6.0	8/90	\$75
PowerTools	3.0	4MB/6.0		*	SmartScrap & The Clipper	2.0	1MB/6.0.3		\$20	VersaCAD/	2.11	1MB/6.0		Free
Practica Musica	2.1	512K/3.2		\$10	Snap ★	3.1	1MB/3.0		*	Macintosh Edition ★				
Printer Interface III	2.0	512K/6.0.2		\$22.50	SnapJot	3.0	512K/4.1		*	Vietnam War	2.0	1MB/6.0		*
Pro-Cite ★	1.3	512K/4.1		*	SoftPC ★	1.3	2MB/6.0		*	Virex	3.0	1MB/4.2		\$25
Professional Composer	2.3	1MB/6.0.3		Free	Sound Designer	1.5	512K/6.0.3		\$45	Virtual 2.0 for 030	2.03	1MB/4.2		Free
Professional Image II	2.0	1MB/6.0		\$22	Universal ★					Virtual 2.0 for Mac II	2.03	1MB/4.2		Free
The Programmer's	2.0	1MB/6.0.2		\$10	Spelling Coach	3.1	512KE/4.2		*	Virtual 2.0 for Mac Plus	2.02	1MB/4.2		Free
Online Companion					Professional					Vision	1.1	1MB/6.0.3		Free
Prograph	2.0	2MB/6.0	8/90	*	Spellswell ★	2.2	512K/3.2		\$20	VMacS	2.0	1MB/6.0		\$25
Property Management III		1MB/6.0.1		\$100	Spinnaker Plus	2.0	2MB/6.0		\$45	Voyager	1.2	1MB/6.0		*
PropsForms	2.0	1MB/6.0.3		Free	Springboard Publisher	2.0	1MB/6.0		*	Wall Street Investor	3.0	1MB/5.0		\$150
Prototyper ★	2.01	1MB/4.1		\$79	Stepping Out II	2.0	1MB/4.1		Free	White Knight II	11.6	1MB/6.0.2	7/90	\$35
Publish It	1.2	512KE/5.0		*	StickyBusiness	1.06	512KE/6.0.3		Free	Wild Things ★	1.1	1MB/6.0		Free
Publish It Easy	2.0	1MB/6.0	9/90	*	StrataVision 3d	2.0	2MB/6.0.3		\$99	WillMaker	4.0	512KE/4.2	3/91	\$18.50
Publish or Perish	5.0	512K/4.2		\$10	StuffIt Classic	1.6	1MB/6.0		*	Wingz ★	1.1	1MB/6.0		Free
Pyro	4.0	512K/4.1	7/90	\$15	StuffIt Deluxe	2.0	1MB/6.0		Free	Word Finder	2.0	512K/3.2		*
O-Sheet A/V	2.0	1MB/6.0	10/90	\$50	Suitcase II	1.2.6	512KE/4.1		\$25	WordPerfect for	2.0	1MB/4.2		*
QuarkXPress	3.0	2MB/6.0.5	11/90	\$30	Super 3D	2.1	512KE/6.0.2		Free	the Macintosh				
Quicken ★	1.5	512K/3.2		*	SuperANOVA	1.1	1MB/6.0.2		Free	WorksPlus Command	2.0	2MB/6.0.3		\$35
QuickKeys*	2.0.1	1MB/6.0.2	1/91	\$49.95	SuperGlue II with	2.1	1MB/6.0		*	WorksPlus Spell	2.0	1MB/6.0.3		\$35
QuickLetter	1.1.2	1MB/6.0		\$30	GlueNotes					WriteNow	2.2	512K/4.2	9/90	\$49

To have products listed in this section, send upgraded software, an outline of changes since the previous release (indicate if it's a maintenance upgrade), upgrade price, minimum RAM and system software, suggested retail price, company name, mailing address, and phone number to *Updates*, Macworld, 501 Second St., San Francisco, CA 94107.



**Look for Official Macworld Books nationwide at:**  
B. DALTON  
BARNES & NOBLE  
BOOKSTOP/BOOKSTAR  
SOFTWARE ETC.  
WALDEN SOFTWARE  
WALDEN BOOKS

#### Alaska

BOOK CACHE-Available at all locations, including Anchorage (907) 277-2773

BAKER AND BAKER  
BOOKSELLERS  
Fairbanks  
(907) 456-2278

#### Northern California

STACEY'S BOOKSTORE  
Cupertino  
(408) 253-7521  
Modesto  
(209) 527-7120  
Palo Alto  
(415) 326-0681  
San Francisco  
(415) 397-7935  
(415) 421-4687

TOWER BOOKS:  
BOOKSTORE  
Chico  
(916) 893-2665  
Citrus Heights  
(916) 961-7202  
Mountain View  
(415) 941-7300  
Sacramento  
(916) 444-6688  
(916) 481-6600  
(916) 391-6121  
San Mateo  
(415) 570-7444

WHOLE EARTH ACCESS  
Concord  
(415) 686-2270  
San Francisco  
(415) 285-5244  
San Jose  
(408) 554-8300  
San Mateo  
(415) 578-9200  
San Rafael  
(415) 459-3533

CODY'S BOOKS  
Berkeley  
(415) 845-7852

COMPUTER LITERACY  
BOOKSHOPS  
Cupertino  
(408) 973-9953

GAYLE'S BOOKS  
Davis  
(916) 756-5155

UCD BOOKSTORE  
Davis

STANFORD  
BOOKSTORE  
Palo Alto  
(415) 327-3680

AARDVARK BOOKS  
San Francisco  
(415) 558-0420

FOLEY'S BOOKS, INC.  
San Francisco  
(415) 982-7766

FRANCISCAN SHOPS  
San Francisco  
(415) 338-2092

COMPUTER LITERACY  
BOOKSHOPS  
San Jose  
(408) 435-1118

COPPERFIELD'S BOOKS  
Santa Rosa  
(707) 578-8938

STANFORD BOOKSTORE  
Stanford  
(415) 329-1217

COMPUTER LITERACY  
BOOKSHOPS  
Sunnyvale  
(408) 730-9995

#### Southern California

HUNTLEY BOOKSTORE  
Claremont  
(714) 621-8168

UCLA BOOKSTORE  
Los Angeles  
(213) 206-0764

USC TROJAN  
BOOKSTORE  
Los Angeles  
(213) 740-2665

OPAMP  
TECHNICAL  
BOOKS  
Los Angeles  
(213) 464-4322

VROMAN'S  
Pasadena  
(818) 449-5320

SAN DIEGO  
TECHNICAL BOOKS  
San Diego  
(619) 279-4990

UNIVERSITY BOOKSTORE  
San Diego  
(619) 534-0117

#### Colorado

UNIVERSITY  
BOOKSTORE  
Greeley  
(303) 351-2136

#### Connecticut

HUNTINGTON'S  
BOOKSTORE  
Hartford  
(203) 527-1835

R.J. JULIA BOOKSELLERS  
Madison  
(203) 245-3959

YALE Co-Op  
New Haven  
(800) ELI-YALE

BOOKS UNLIMITED  
Rocky Hill  
(203) 563-3667

U CONN Co-Op  
Storrs  
(203) 486-5027

#### District of Columbia

REITER'S SCIENTIFIC AND  
PROFESSIONAL BOOKS  
Washington  
(202) 223-3327

REPRINT BOOK SHOP  
Washington  
(202) 554-5070

#### Hawaii

HONOLULU  
BOOK SHOPS  
Honolulu  
(808) 941-2274

#### Illinois

PAGES FOR ALL AGES  
BOOKSTORE  
Champaign  
(217) 351-7243

57TH STREET BOOKS  
Chicago  
(312) 684-1300

KROCH'S & BRENTANO'S  
Chicago  
(800) 833-BOOK

READMORE  
BOOKWORLD  
Rock Island

BOOKWORLD III  
Rockford

BOOK CENTER IN  
ILLINOIS UNION  
Urbana  
(217) 333-0437

LORA & WALLY GRIGG  
BOOKSELLERS  
Woodstock

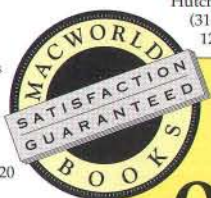
#### Indiana

BOOK CORNER  
Bloomington  
(812) 339-1522

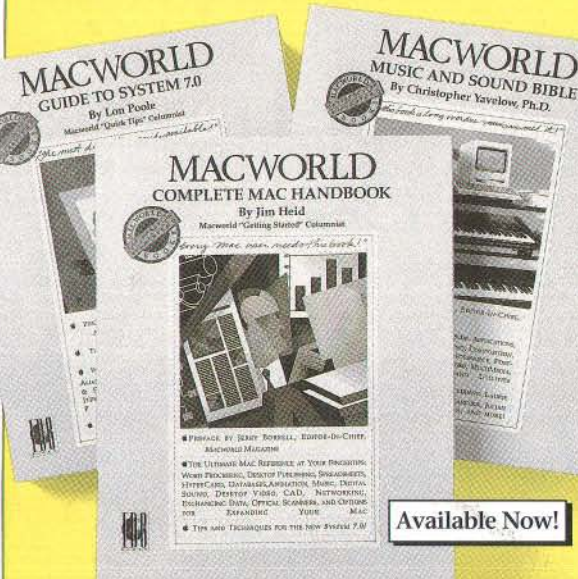
BALL STATE UNIVERSITY  
BOOKSTORE  
Muncie  
(317) 285-8093

#### Kansas

CROSSROADS INC.  
Hutchinson  
(316) 662-1205



# The Mark of Excellence



**Available Now!**

## Macworld Complete Mac Handbook

- Ultimate Mac Reference • Expert Advice on System 7.0
- 100s of Tips on Classic, IISI, LC, Personal LaserWriter LS and StyleWriter • Software & Hardware-Soup to Nuts!
- "Full of great tips on how to buy and use Macs"...
- Frank Casanova, High Performance Mac, Apple Computer

\$26.95 USA/\$35.95 Canada, 544 pages

## Macworld Guide to System 7.0

- Lon Poole Reveals Undocumented Features, Tips & More!
- Heavily Illustrated

\$24.95 USA/\$33.95 Canada, 320 pages

## Macworld Music & Sound Bible

- Music Guru Christopher Yavelow, Ph.D. Delivers a 1,024 Page Tome of In-depth Analysis, Reviews, & Celebrity Interviews-Destined to Become a Classic!

\$34.95 USA/\$46.95 Canada, 1,024 pages

If you can't find Macworld books, call 1-800-282-6657 to order direct.

UNIVERSITY  
BOOK STORE  
Manhattan

#### Massachusetts

CHARLESBANK  
BOOKSHOP  
AT BOSTON  
UNIVERSITY  
Boston  
(617) 236-7415

BROOKLINE BOOKSMITH  
Brookline  
(617) 566-7539

BARILLARI BOOKS  
Cambridge  
(617) 864-2400

#### Nebraska

NEBRASKA BOOKSTORE  
Lincoln  
(402) 476-0111

UNIVERSITY BOOKSTORE  
Lincoln  
(402) 472-7300

#### New Hampshire

DARTMOUTH BOOKSTORE  
Hanover

#### New Jersey

McGraw HILL  
BOOKSTORE  
Hightstown  
(609) 426-5748

CAMBRIDGE BOOKSMITH  
Cambridge  
(617) 864-2321

#### Minnesota

BAXTER BOOKS  
Minneapolis  
(612) 339-4922

MAVERICK BOOKSTORE  
Mankato

ODEGARD BOOKS  
SAINT PAUL  
St. Paul  
(800) 247-0635

#### New York

BARNARD BOOK FORUM  
New York  
(212) 749-5535

CLASSIC BOOKSHOP  
New York  
(212) 221-2252

CLASSIC BOOKSHOP  
New York  
(212) 466-0668

COLISEUM BOOKS  
New York  
(212) 757-8381

#### Oregon

O.S.U. BOOK STORES  
Corvallis  
(503) 737-1505

BOOK MARK  
Eugene  
(503) 484-0512

UNIVERSITY OF OREGON  
BOOKSTORE  
Eugene  
(503) 346-4331

POWELL'S BOOKSTORE  
At CASCADE PLAZA  
Beaverton  
(503) 643-3131

POWELL'S TECHNICAL  
BOOKSTORE  
Portland  
(503) 228-3906

REED COLLEGE  
BOOKSTORE  
Portland  
(503) 777-7758

#### Pennsylvania

THE BOOK STORE  
Philadelphia

THE BOOK CENTER  
Pittsburgh

#### Tennessee

BOOKWORLD  
Nashville  
(615) 254-9733

#### Texas

BOOKSTOP: all  
locations,  
including Austin.

TAYLORS  
TECHNICAL BOOKS:  
Dallas  
(214) 239-8324  
(214) 320-1200  
(214) 363-1500  
(214) 296-1100  
Ft. Worth  
(817) 763-0011  
Plano  
(214) 881-1300

J.A. MAJORS  
Houston  
(713) 522-1361

#### Washington

TOWER BOOKS  
Bellevue  
(206) 451-1110

UNIVERSITY BOOKSTORE  
Bellevue  
(206) 646-3300

ELLIOTT BAY BOOK CO.  
Seattle  
(206) 624-6600

TOWER BOOKS  
Seattle  
(206) 283-6333

UNIVERSITY BOOK STORE  
Seattle  
(206) 634-3400

#### Wisconsin

CONKEY'S BOOK STORE  
Appleton

HARRY W. SCHWARTZ  
Milwaukee  
(800) 552-7323

#### CANADA

THE BOOK COMPANY  
BANKER'S HALL  
Calgary  
(416) 670-1118

CALGARY COMPUTER  
BOOKS  
Calgary  
(403) 270-0952

AUDREY'S BOOKS  
Edmonton  
(403) 423-3487

GREENWOOD'S  
BOOKSHOPS  
Edmonton  
(403) 439-2005

SOFTWAREHOUSE (West)  
Edmonton  
(403) 429-4388

#### British Columbia

GRANVILLE BOOK CO.  
Vancouver  
(604) 687-2213

SILICON CONNECTIONS BOOKS  
Vancouver  
(604) 222-2221

BOLEN BOOKS  
Victoria

#### Nova Scotia

THE BOOK COMPANY  
ENTITLEMENT  
Halifax  
(416) 670-1118

#### Ontario

COLES BOOK STORES  
Available at all  
locations

LICHTMAN'S STORES  
Toronto  
(416) 368-7325

(416) 221-5216  
(416) 591-1617  
(416) 482-2462  
(416) 783-9723

Thornhill  
(416) 881-5488

THE BOOK COMPANY  
PROSPERO BOOKS  
Ottawa  
(416) 670-1118

ODYSSEY COMPUTER  
& BUSINESS  
Ottawa

ALBERT BRITNELL  
BOOKSHOP  
Toronto  
(416) 924-3321

BOOKS FOR BUSINESS  
Toronto  
(416) 362-7822

WORLD'S BIGGEST  
BOOKSTORE  
Toronto  
(416) 977-7009

UNIVERSITY OF TORONTO  
BOOKSTORE  
Toronto  
(416) 978-7925

UNIVERSITY OF  
WATERLOO  
BOOKSTORE  
Waterloo  
(519) 885-1211

#### Quebec

CAMELOT-INFO COMP.  
BOOKS & SOFTWARE  
Montreal  
(514) 861-5019

ROSWELL COMPUTER  
BOOKS  
Montreal  
(514) 848-9954

BOOK & BRIER PATCH  
Regina, Saskatchewan  
(306) 586-5814



IDG BOOKS WORLDWIDE  
155 BOVET ROAD, SUITE 730  
SAN MATEO, CA 94402  
(415) 358-1250



Precision. Fidelity. Vivid reality.  
Absolute simplicity. Breathtaking detail  
— just some of the thousand words  
any LS-3500 scan is worth. But how  
can words suffice when Nikon is, once  
again, defining a standard?

Exhibit A: The Shot. Rick Muller's  
masterpiece to the right. We call it  
'Color Separating.' Captured by Nikkor  
optics, it was scanned on the LS-3500.

Exhibit B: The Reviews. "★★★★½  
[The LS-3500] wins overall for flexibil-  
ity in resolution and for the wide range  
of controls it offers," said MacUser.\*  
To quote a MacWEEK comparison, "The  
Nikon scanner's self-calibration and  
auto-focusing set a new standard in  
ease of use for slide scanners. It's also  
noticeably faster ...""

The LS-3500  
Scanner provides  
the same results  
on a Macintosh®,  
IBM® MS-DOS or  
UNIX® system.

Exhibit C: The Real  
Upshot. Concerned that  
our 35mm format might  
be limiting? Please note:  
Exhibit A began life as an  
8x10 transparency. Also note  
that the LS-3500 performs equally well  
with negatives and monochromes. So,  
ultimately, the format of your source  
material is largely immaterial.

For more information, write or call:  
Nikon Electronic Imaging, Dept. B2,  
101 Cleveland Avenue, Bayshore,  
NY 11706, (516) 547-4355. Or call  
1-800-NIKON-US for the nearest dealer.



**DESKTOP COLOR  
SEPARATING DEFINED:  
THE NIKON LS-3500.**



**Nikon**  
**ELECTRONIC IMAGING**

r e c r e a t i v i t y

\*Reprinted with permission from MacUser September 1990. Copyright © 1990 Ziff Communications Company

\*\*Reprinted with permission from MacWEEK January 30, 1990. Copyright © 1990 Coastal Associates Publishing L.P.

© 1991 Nikon, Inc.

Nikon, Kodachrome, Macintosh, IBM and UNIX are trademarks of their respective companies.

Circle 67 on reader service card



# WHERE TO BUY

## A Guide to Products Featured in This Issue

This listing provides companies and phone numbers for products mentioned in this issue.

**3 in Three** Cinemaware; 805/495-6515.  
**The '88 Vote; AIDS; In the Holy Land; Martin Luther King Jr.; Planetscapes; The Visual Almanac** Optical Data Corp.; 908/668-0022, 800/524-2481; fax 908/668-1322.  
**Addmotion** Motion Works; 604/732-0289; fax 604/732-5606.  
**Adobe Illustrator; Adobe Photoshop; Adobe Type Manager; Adobe Type Reunion** Adobe Systems; 415/961-4400, 800/833-6687.  
**Agar: An Animal Construction Kit** Mije Travers, MIT Media Laboratory E15-494, 20 Ames St., Cambridge, MA 02139.  
**Aldus FreeHand 2.02** Aldus Corp.; 206/628-2320.  
**Allegro Common Lisp** APDA-Apple Computer; 408/562-3910, 800/282-2732.  
**A.M.E.** Casady & Greene; 408/624-8716, 800/359-4920.  
**The Animation Stand** Linker Systems; 714/552-1904.  
**Attila II** IS Robotics; 800/495-8265.  
**Audiomedia** Digidesign; 415/688-0600, 800/333-2137.  
**Authorware Professional** Authorware; 612/921-8555.  
**BannerMania** Brøderbund Software; 415/492-3200, 800/521-6263.  
**CASim** Ken Karakotsios; 1272 Copper Ln., San Jose, CA 95120.  
**ColorScript 100 Model 30i** QMS; 205/633-4300, 800/523-2696.  
**ColorSpace Ili** Mass Microsystems; 408/522-1200, 800/522-7979; fax 408/733-5499.  
**ColorStudio** Letraset Graphic Design Software; 201/845-6100, 800/343-8973.  
**ConvertIt** Heizer Software; 415/943-7667, 800/888-7667; fax 415/943-6882.  
**DataLink/Mac** Applied Engineering; 214/241-6060; fax 214/484-1365.  
**DigiVideo** Aapps Corp.; 408/735-8550.  
**DQ-Animap** Diaquest; 415/526-7167.  
**EasyKana** HyperGlot Software; 615/558-8270, 800/726-5087; fax 615-588-6569.  
**Editorial Advisor** Petroglyph; 415/979-0588; fax 415/979-0589.  
**ES-300C** Epson America; 213/782-0770, 800/289-3776.  
**Evolution** Image Club Graphics; 403/262-8008, 800/661-9410.  
**Financial Independence, As You Like It** Cherokee Publishing; 404/424-6210, 800/548-8778.  
**FolderJump** Cra Z Software; 508/521-5262.  
**Fontina** Eastgate Systems; 617/924-9044.  
**Fractal Attraction** Sandpiper Software; 612/644-7395.  
**FrameGrabber 324NC** RasterOps Corp.; 408/562-4200, 800/468-7600; fax 408/562-4065.  
**The Great Quake of '89** The Voyager Company; 213/451-1383, 800/446-2001; fax 213/394-2156.  
**interFACE** Bright Star Technology; 206/451-

3697; fax 206/454-1062.  
**Intouch** Advanced Software; 408/733-0745, 800/346-5392; fax 408/733-2335.  
**LifeGuard** Visionary Software; 503/246-6200, 800/877-1832; fax 503/452-1198.  
**Linotype Font Utilities** Linotype-Hell; 516/434-2000, 800/633-1900; fax 516/434-2706.  
**MacProteus** Digidesign; 415/688-0600, 800/333-2137.  
**MacRecorder; MediaTracks** Farallon Computing; 415/596-9100; fax 415/596-9020.  
**MacroMind Director** MacroMind; 415/442-0200.  
**MacVision Color Video Digitizer; MacVision Video Digitizer** Koala Acquisitions; 408/287-6311.  
**The Magic Flute** Warner New Media; 818/955-9999, 800/828-4766; fax 818/955-6499.  
**MasterJuggler** ALSoft; 713/353-4090.  
**Metamorphosis** Altsys; 214/680-2060.  
**MIDI Hits; MIDI Records** Music Data, Division of Passport Designs; 415/726-0280.  
**MONOCHROME MONITORS**  
**Apple Computer;** 408/996-1010.  
**CalComp;** 603/885-8031, 800/696-3741.  
**Dotronix;** 612/633-1742; fax 612/633-7025.  
**Ehman;** 307/789-3830, 800/257-1666; fax 307/789-4656.  
**Generation Systems;** 408/734-2100, 800/325-5811; fax 408/734-4626.  
**Genius Technologies;** 612/437-2233, 800/328-9524; fax 612/437-7325.

**MacTel Technology Corp.;** 512/451-2600, 800/950-8411; fax 512/451-3323.  
**MegaGraphics;** 805/484-3799, 800/487-6342; fax 805/484-5870.  
**Mirror Technologies;** 612/633-4450, 800/654-5294.  
**Mobius Technologies;** 415/654-0556, 800/669-0556; fax 415/654-2834.  
**Moniterm Corp.;** 612/935-4151, 800/933-5740; fax 612/933-5701.  
**Nutmeg Systems;** 203/966-3226, 800/777-8439; fax 203/966-7972.  
**PCPC;** 813/884-3092, 800/622-2888; fax 813/886-0520.  
**Qume Corp.;** 408/942-4000, 800/223-2479; fax 408/942-4052.  
**Radius;** 408/434-1010, 800/227-2795; fax 408/434-0127.  
**RasterOps Corp.;** 408/562-4200, 800/468-7600; fax 408/562-4065.  
**Relax Technology;** 415/471-6112.  
**Sigma Designs;** 415/770-0100, 800/933-9945.  
**SuperMac Technology;** 408/245-2202; fax 408/735-7250.  
**The New Grolier Electronic Encyclopedia** Grolier Electronic Publishing; 203/797-3500, 800/356-5590; fax 203/797-3197.  
**NuVista+** Truevision; 317/841-0332, 800/858-8783.  
**OcéColor printer** Océ Graphics; 415/964-7900, 800/545-5445; fax 415/961-6152.  
**Org Plus for Macintosh** Banner Blue; 415/794-6850; fax 415/794-9152.  
**Page Director** Managing Editor Software; 215/635-5074.

**PC-VCR** NEC Technologies; 508/264-8000, 800/632-4636.  
**PERSONAL PAGE PRINTERS**  
**Abaton, a Subsidiary of Everex Systems;** 415/683-2226, 800/444-5321.  
**Adobe Systems;** 415/961-4400, 800/833-6687.  
**Apple Computer;** 408/996-1010.  
**Canon USA;** 516/488-6700.  
**Custom Applications;** 508/667-8585, 800/873-4367; fax 508/667-8821.  
**Dataproducts Corp.;** 818/887-8000, 800/825-5372; fax 818/888-4038.  
**Epson America;** 213/782-0770, 800/289-3776.  
**Fujitsu America;** 415/967-4444, 800/626-4686; fax 408/432-1318.  
**GCC Technologies;** 617/890-0880, 800/422-7777.  
**GDT Softworks;** 604/291-9121; fax 604/291-9689.  
**Hewlett-Packard;** 800/752-0900.  
**Insight Development Corp.;** 415/652-4115, 800/825-4115; fax 415/652-9857.  
**Microtek;** 213/321-2121, 800/654-4160.  
**NEC Technologies;** 508/264-8000, 800/632-4636.  
**Okidata;** 609/235-2600, 800/654-3282; fax 609/778-4184.  
**Orange Micro;** 714/779-2772, 800/223-8029.  
**Pacific Data Products;** 619/552-0880; fax 619/552-0889.  
**QMS;** 205/633-4300, 800/523-2696.  
**Qume Corp.;** 408/942-4000, 800/223-2479; fax 408/942-4052.  
**TeleTypesetting Co.;** 617/734-9700; fax 617/734-3974.  
*(continues)*




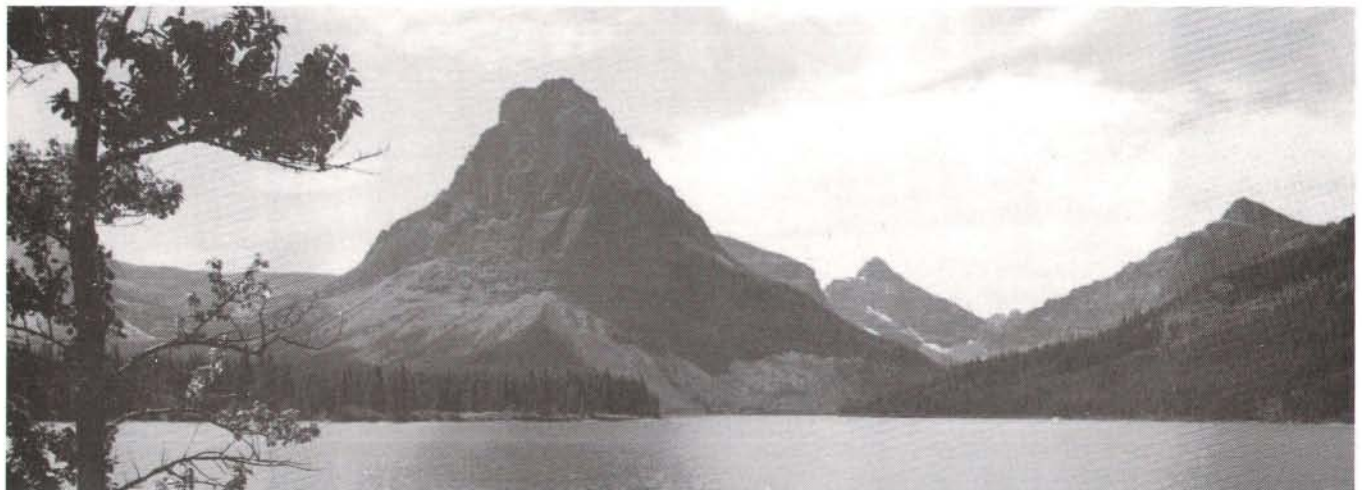
**Texas Instruments;** 512/250-6679, 800/527-3500.  
**Personal Vision** Orange Micro; 714/779-2772, 800/223-8029.  
**PLP II** GCC Technologies; 617/890-0880, 800/422-7777.  
**Plus** Spinnaker Software; 617/494-1200; fax 617/494-1219.  
**QuarkXPress** Quark; 303/934-2211, 800/356-9363; fax 303/377-6327.  
**RadiusTV** Radius; 408/434-1010, 800/227-2795; fax 408/434-0127.  
**Ram** Seth Goldman; AI Lab, 3531 Boelter Hall, UCLA, Los Angeles, CA 90024.  
**The Random House Encyclopedia, Electronic Edition** Microlytics; 716/248-9150, 800/828-6293; fax 716/248-3868.  
**REMOVABLE-CARTRIDGE DRIVES** Alliance Peripheral Systems; 816/478-8300, 800/233-7550.

**Club Mac;** 714/768-1490; fax 714/768-7307.  
**CMS Enhancements;** 714/222-6000.  
**Cutting Edge;** 307/789-0582.  
**Data Enhancements;** 818/879-2700; fax 818/879-2705.  
**DPI;** 408/945-1850, 800/825-1850; fax 408/945-8148.  
**Ehman;** 307/789-3830, 800/257-1666; fax 307/789-4656.  
**FWB;** 415/474-8055.  
**GCC Technologies;** 617/890-0880, 800/422-7777.  
**Hard Drives International;** 602/967-5128, 800/234-3475.  
**iDS Systems;** 408/752-2952, 800/733-0078.  
**Image South;** 404/449-7270, 800/786-0914; fax 404/448-3712.  
**lomega Corp.;** 801/778-1000, 800/456-5522.  
**Jasmine Technologies;** 408/752-2900,

800/347-3228.  
**MacLand;** 602/820-5802, 800/333-3353.  
**MacProducts USA;** 512/343-9560, 800/622-3475.  
**MacTown;** 800/338-4273; fax 303/442-7985.  
**Mass Microsystems;** 408/522-1200, 800/522-7979; fax 408/733-5499.  
**Mega Drive Systems;** 213/556-1663, 800/322-4744; fax 213/556-1164.  
**MicroNet Technology;** 714/837-6033.  
**Microtech International;** 203/468-6223, 800/626-4276.  
**Mirror Technologies;** 612/633-4450, 800/654-5294.  
**Ocean Microsystems;** 408/374-8300, 800/262-3261.  
**Optima Technology;** 714/476-0515.  
**PLI;** 415/657-2211, 800/288-8754.  
**Procom Technology;** 714/549-9449; fax 714/549-0527.

**Relax Technology;** 415/471-6112.  
**Rodime Systems;** 407/994-5585, 800/588-9390; fax 407/997-6197.  
**Ruby Systems;** 408/735-8668, 800/888-1668; fax 408/735-8696.  
**Sumo Systems;** 408/453-5744; fax 408/453-5821.  
**Third Wave Computing;** 512/832-8282, 800/284-0486.  
**Total Peripherals;** 508/480-9042.  
**Univation;** 408/263-1200; fax 408/263-1474.  
**Z Microsystems;** 619/431-5290; fax 619/431-5750.  
**The String Quartet** Warner New Media; 818/955-9999, 800/828-4766; fax 818/955-6499.  
**Studio/1** Electronic Arts; 415/571-7171, 800/245-4525.  
**Suitcase II** Fifth Generation Systems; 504/291-7221, 800/873-4384; fax 504/295-3268.

**Super 3D; SuperCard** Silicon Beach Software; 619/695-6956.  
**Swivel 3D Professional** Paracomp; 415/956-4091; fax 415/956-9525.  
**TV Producer Pro** Computer Friends; 503/626-2291, 800/547-3303.  
**Wouldn't You Rather Be Rich** Cherokee Publishing; 404/424-6210, 800/548-8778.  
**WTI-Moonraker** Workstation Technologies; 714/250-8983.   
 Public domain software, freeware, and shareware are available through online information services; user groups (call 800/538-9696 ext. 500 for information on a local user group); or mail-order clearinghouses such as EDUCORP (800/843-9497, 519/536-9999), or the Public Domain Exchange (800/331-8125, 408/496-0624 in California).



## Saving the best of America.

From the Atlantic to the Pacific, the Arctic to the Gulf, our land is constantly under attack from the polluters and despoilers.

That's why Sierra Club Legal Defense Fund attorneys are pursuing dozens of cases nationwide in defense of wildlife, rare habitats, the air we breathe and the water we drink.

Most of our support comes from individual contributors like you. Please help us win.

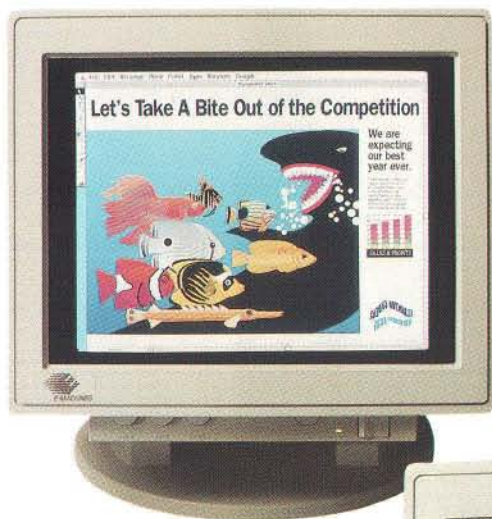
Because we're saving the best of America.

**Sierra Club Legal Defense Fund**

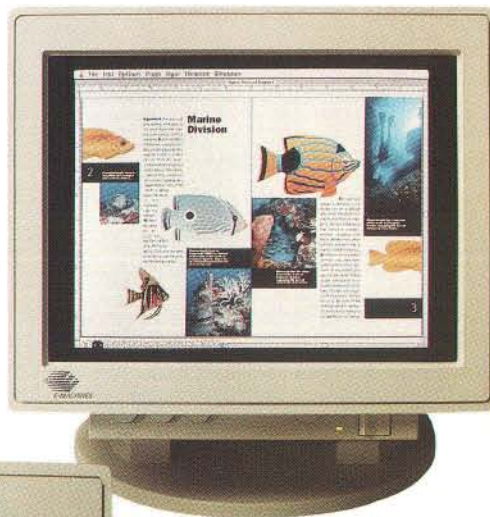
2044 Fillmore, San Francisco, CA 94115



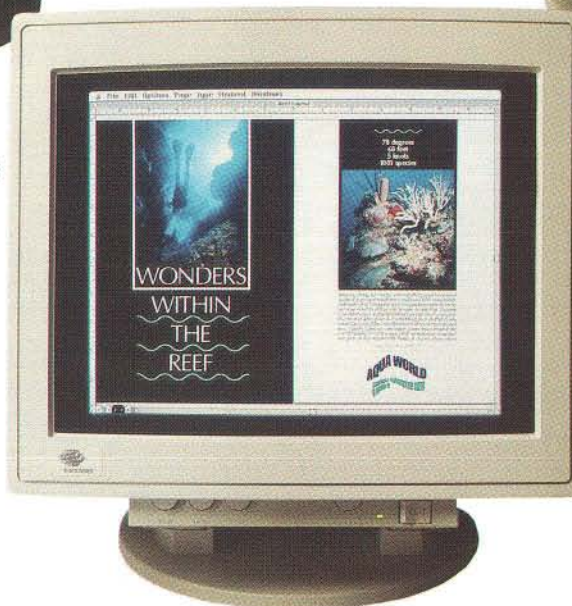
# The E's Have It



**E-MACHINES T16**  
E-Magination at work™  
Full Page 16"  
Display System. **\$1,495\***



**E-MACHINES TX**  
E-Magination at work™  
Two Page 16"  
Display System. **\$2,195\***



**E-MACHINES T19**  
E-Magination at work™  
Two Page 19"  
Display System. **\$3,095\***

## E-MACHINES Color Displays At ERI Prices.

### DEALTIME



#### Trade-in Rebate

\*\$500 off when you send us your  
Apple 13" Color Display.



#### Macintosh Systems

MAC IIsi, T16 Color Display  
2MB/40HD, Keyboard **\$4995**

MAC IIsi, T16 Color Display  
5MB/80HD, Keyboard **\$5595**

MAC IIci, T16 Color Display  
4MB/105HD, Keyboard **\$6595**

MAC IIx, T16 Color Display  
4MB/105HD, Keyboard **\$8690**



#### E-Machines Extras

Quickview Studio . . . . . \$1,995

Call for E-MACHINES 24-bit Display Prices!



"ERI DIRECT has become a terrific source for  
Macintosh products. I give them a 5-mice rating!"

Joe Salinger, Scholastic, Inc.

"The winner and still champion. We simply  
couldn't find a flaw in this razor sharp  
16-inch Trinitron."

MacUser LABS, May 1990



NATIONWIDE RESELLER

1801 West Larchmont Ave.  
Chicago, Illinois 60613 USA  
312.549.0030  
FAX 312.549.6447



**Call Today! 800-535-3252**

**Try It For 21 Days At NO Risk!**

Circle 184 on reader service card



# Personal Service • Lowest Prices Money Back Guarantee



# DR MAC

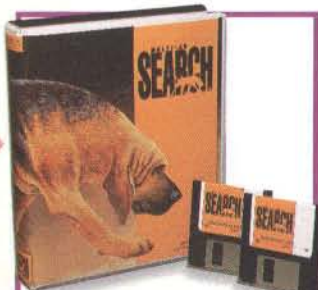
## Software

<b>ABRACADATA</b>	
Design your own Home Landscape, Architecture or Interiors .....	58
<b>ADOBE SYSTEMS</b>	
Adobe Illustrator 3.0 with ATM .....	339
Adobe Type Manager .....	55
Adobe TypeSet 1 or 2 .....	55
Adobe Type Align .....	58
StreamLine 2.0 .....	112
Photoshop .....	489
Fonts .....	CALL
Type On Call .....	49
<b>ANDROMEDA</b>	
Master Tuner .....	55



**24/96 FAX MODEM ..... \$265**  
A 2400 bps data modem! A 9600 bps SEND/RECEIVE fax! Includes Maxfax software and its many exclusive features, like grey scale capability, plus MacKNOWLEDGE™ communications software and a Macintosh cable. A complete communications package!

<b>ALDUS</b>	
Pagemaker .....	489
Freehand 2.0 .....	319
Persuasion .....	319
<b>ALADIN</b>	
Shortcut 1.5 .....	45
Stuffit Deluxe 2.0 .....	62
<b>ASD</b>	
FileGuard 2.5 .....	137
<b>ASHLAR</b>	
AshlarVellum .....	599
<b>ASHTON TATE</b>	
FullWrite .....	135
Full Impact .....	135
<b>AVERY</b>	
MacLabelPro .....	47
Labels Available .....	CALL
<b>BRODERBUND</b>	
TypeStyler .....	112
<b>CAERE</b>	
OmniPage .....	499
Typist .....	469
<b>CARAVELLE</b>	
Mac To Mac (Special 10 pak price) .....	210
<b>CERES</b>	
Inspiration .....	115
<b>CE SOFTWARE</b>	
Quickmail 10 User .....	298
QuickKeys .....	94
DiskTop 4.0 .....	64
<b>CHIPSOFT</b>	
TurboTax Personal/1040 .....	49
<b>CLARIS</b>	
MacWrite II .....	139
FileMaker Pro .....	209
MacDraw II .....	275
ClarisCad .....	625
SmartForm Designer .....	279

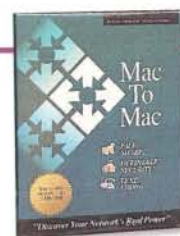


**MULTI-AD SEARCH ..... \$108**  
Multi-Ad Search™ is an image cataloging and retrieval system. Users can search by keyword, filename, filetype, volume or expiration date. Thumbnails or text display. Supports EPSF, TIFF, PICT, and MacPaint files.



**CORDLESS STYLUS & DRAWING TABLET ..... CALL**  
WACOM's award winning, cordless, pressure sensitive stylus and tablet combine to offer a perfect tool for all graphic designers and illustrators.

<b>CUSTOM APPLICATIONS</b>	
Freedom of Press .....	249
Freedom of Press Pro .....	1250
Freedom of Press Lite .....	56
<b>DELTA POINT</b>	
DeltaGraph .....	105
Taste .....	75
<b>DEST</b>	
Recognize! .....	475
<b>DYNWARE</b>	
DynaPerspective 3D .....	619
<b>FARALLON</b>	
Media Tracks .....	185
Timbuktu .....	92
Timbuktu Remote 2.0 .....	122
Timbuktu 3.1 30 Pack .....	1275
<b>FRANKLIN SOFTWARE</b>	
Language Master .....	57



**MAC TO MAC ..... \$210**  
**Special 10-pak price!**  
Network Desk Accessories: FileShare, a fast and simple tool for sharing files on any AppleTalk network, features direct multiple file transfers, background operation and security. TextPhone is a text conferencing tool that allows users on any AppleTalk network to talk to each other and leave messages.

<b>FREESOFT</b>	
White Knight .....	81
<b>HYPERPRESS</b>	
PictureLink .....	199
<b>ICOM SIMULATIONS</b>	
On Cue .....	34
TMON .....	85
HyperTMON .....	56
<b>INNOVATIVE DATA DESIGN</b>	
Dreams 1.1 .....	399
MacDraft 2.1 .....	299
<b>INSIGHT DEVELOPMENT</b>	
MacPrint .....	89
<b>INSIGNIA</b>	
Soft PC .....	242
<b>INT'L BUSINESS SOFTWARE</b>	
Dataclub - 3 user pack .....	175
Dataclub 10 Pack .....	499
<b>LANGUAGE SYSTEMS</b>	
Fortran with MPW .....	398
Wild Things .....	119
<b>LEXPERTISE</b>	
MacProof .....	104
<b>MACROMIND</b>	
Macromind Director .....	625
Accelerator .....	125
<b>MAGNA</b>	
Empower I .....	119
Empower II .....	142
<b>MAINSTAY</b>	
MacFlow 3.5 .....	168
<b>MANAPRO</b>	
General Ledger .....	480

<b>MICROCOM</b>	
Carbon Copy Mac .....	115
Virex .....	55
Virex 10 Pack .....	345
<b>MICROFRONTIER</b>	
Enhance .....	199
<b>MICROLYTICS</b>	
Inside Information .....	59
Gofor .....	52
Wordfinder .....	34
<b>MICROSOFT</b>	
Word 4.0 .....	248
Excel .....	248
Help for Excel with Excel purchase .....	25
Power Point .....	248
Microsoft Office .....	565
<b>MULTI-AD SERVICES</b>	
Multi-Ad Creator .....	498
Multi-Ad Search .....	108



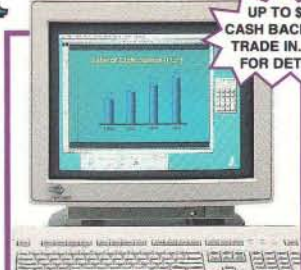
**NISUS ..... \$238**  
Nisus word processing has unlimited undos, noncontiguous selection, an integrated thesaurus, foreign language dictionaries, PowerSearch and a built-in word processing language. Only Nisus® offers graphics with so many page layout capabilities.

<b>NOW SOFTWARE</b>	
ScreenLocker .....	43
Now Utilities .....	74
<b>ODESTA CORPORATION</b>	
Double Helix .....	365
Data Desk .....	465
<b>OLDUVAL</b>	
VideoPaint .....	199
<b>ON TECHNOLOGY</b>	
On Location .....	71
<b>OPCODE</b>	
EZ Vision .....	98
<b>PARACOMP</b>	
Model Shop .....	369
Filmaker .....	429
Swivel 3D Professional .....	429
<b>PARAGON</b>	
Nisus .....	238



**MULTI-AD CREATOR ..... \$498**  
Power, speed, precision and color-separating abilities make Multi-Ad Creator™ the top-rated DTP program. Multi-Ad Creator is the high-end choice for making ads—or any page—fast. "If you create ads, get it."—MacUser

<b>PEACHTREE SOFTWARE</b>	
AtOnce .....	275
Insight Expert per module .....	445
<b>PREFERRED PUBLISHING</b>	
Database .....	65
Exposure Pro .....	65
Personality! .....	49
<b>PRE-PRESS TECHNOLOGIES</b>	
SpectreSepp—Quark/Pagemaker .....	225
SpectreScan .....	325
<b>QMS</b>	
UltraScript .....	99
<b>QUARK</b>	
QuarkXPress .....	519
<b>REALITY TECHNOLOGIES</b>	
WealthBuilder .....	142



**COLORPAGE T16 ..... \$2120**  
E-Machines ColorPage T16 is a 16-inch Trinitron monitor that gives you 70% more viewing area than the Apple 13-inch. MacUser Labs, May, 1990, called the ColorPage T16, "The winner and still champion..." and gave it the highest rating of 5 mice.

<b>SALIENT</b>	
DiskDouber .....	42
<b>SERIOUS CORP.</b>	
Serious Programmer .....	194
Serious Developer .....	324
<b>SITKA</b>	
Network Bundle for MAC .....	185
<b>SOFTWARE</b>	
if: X Forms Designer .....	164
Business Expense Reports .....	47
MacInTax .....	56
Personal Tax Analyst .....	46
Quarterly Payroll Tax .....	84
13 States available .....	CALL
<b>SOFTWARE DISCOVERIES</b>	
RecordHolder Plus .....	78
<b>SOLUTIONS INTERNATIONAL</b>	
SmartScrap .....	52
SuperGlue II .....	66
The Curator .....	69



**PRESENTER PROFESSIONAL™ WITH MACRENDERMAN™ ..... \$1715**  
Presenter Professional with MacRenderMan gives you the fastest and most intuitive way to illustrate and present your ideas in 3D. Includes freeform 3D Bezier illustration, Photorealistic rendering, Path/Object animation, and Raytracing.

<b>STRATA</b>	
StrataVision 3D .....	348
StrataVision 3D/MacRenderman .....	1085
<b>STUDIOTRONICS</b>	
Colorset .....	169
<b>SUPERMAC</b>	
Pixel Paint Professional .....	385
Pixel Paint .....	226
<b>SYMANTEC</b>	
Norton Utilities .....	86
SAM .....	65
SUM II .....	104
Think C 4.0 .....	159
<b>SYSTEMS COMPATIBILITY</b>	
Software Bridge .....	75
<b>TACTIC SOFTWARE</b>	
Magic Typist .....	39
Icon It! .....	39
Sound Clips .....	39
ArtClips .....	39
ArtFonts .....	39
FontShare .....	125
<b>TIMEWORKS</b>	
Publish it! Mac .....	219
Publish it! Mac Easy 2.0 .....	109
<b>T-MAKER</b>	
Write Now .....	115
ClickArt .....	From 33
<b>VERTICAL SOLUTIONS</b>	
FastLabel .....	79
FastEnvelope .....	39
<b>VISUAL INFO DEVELOPMENT</b>	
PresenterPro & MacRenderman .....	1715
<b>WORDPERFECT CORP.</b>	
WordPerfect .....	269
<b>ZEDCOR</b>	
Desk .....	199

**Super SIMMS Sale! \$49**  
80 nanoseconds  
Call for Classic Memory

**Corporate Medical Plans:**  
Fed. ID# 95-4183196

- Open an account within 24 hours
- Volume discount pricing
- School purchase orders accepted



# Takes Care of You!

For the **LOWEST** mail order prices, call...  
**(800) 825-6227**  
from the US & Canada  
**FAX (818) 501-3760 or (818) 377-7865**

## Hardware



**PUBLISHER CLASSIC 15" .....\$695**  
**PUBLISHER CLASSIC 19" .....\$1095**

The Publisher Classic is the first display interface combining the Macintosh Classic and a large screen display. This system will allow the user to produce professional documents at a fraction of the cost of other systems.

### APPLE

**Mac Systems - Lowest Pricing CALL**

#### ABATON

Interfax Fax-modem 24/96 ..... 335  
 256 Grey Scale Scanner +Int. .... 1269  
 300/Color & Grayscale Scanner .. 1699  
 PostScript Laser Printer ..... 1995

#### ABCOM

Extended Carry Case for SE ..... 76  
 Carry Case for Mac IIfx / Imagewr. 76  
 Dust Covers ..... CALL

#### ANIMAS

True Color Hand Scanner ..... 562

#### ARTICULATE SYSTEMS

Voice Navigator II ..... 569  
 Voice Link ..... 179

#### CAERE

The Typist ..... 469

#### CAYMAN SYSTEMS

GatorBox ..... 1890  
 GatorCard E/II for Mac II ..... 432

#### COMPATIBLE SYSTEMS

Ether Route ..... 1045  
 Ether Plus ..... 398  
 Ether II ..... 318



**MARSTEK-800/MAC-64(800dpi) . \$399**

Scan directly from Enhance with the only 800 dpi hand scanner. And with 64 gray scales, you'll be amazed at how true your image will be.

## Policies

- Visa, Mastercard & Amex accepted.
- Credit card is not charged until order is shipped.
- California residents add 6.75% sales tax
- Hours: Mon-Fri 9:30-11 EST  
 Sat 11-6 EST
- Call (818) 501-6581, FAX (818) 501-3760
- Compatibility not guaranteed.
- All prices & policies subject to change without notice.

### Shipping

- \$3. Airborne Overnight continental US.
- Hardware over 10 lbs will be shipped ground.
- Same day shipping.

### Returns

- Call for R.A. number before return
- Restocking fee may apply.

### Money Back Guarantee

- Most products have a 30-day money back guarantee. Please inquire when you order.

### DART PRODUCTS

Toner ZipKit ..... 34

### DATADESK

Mac - 101 Keyboard ..... 137  
 Mac - 101 Keyboard (for Plus) ..... 119

### DEST

Mac Scan 3000 plus Recognize .. 1361

Personal Scan ..... 669

### E-MACHINES

ColorPage T16 ..... 2120

QuickView Z21 ..... 1762

QuickView Studio ..... 1933

E-Machines TX ..... 3182

E-Machines T19 ..... 3995

### ERGOTRON

MacTilt ..... 59

### FARALLON

MacRecorder ..... 155

PhoneNET Star Controller 300 ..... 799

PhoneNET Star Controller EN ..... 1575

### GENERATION SYSTEMS

Classic Monitor System 19" ..... 1095

Classic Monitor System 15" ..... 695

### ICD

Graflex ..... 83

### IDS

Pro series 40 Meg ..... 462

Pro series 50 Meg ..... 525

Pro series 100 Meg ..... 822

Pro series 200 Meg ..... 1159

Wip ..... Same prices as above

### IKEGAMI

24 bit color system ..... 3695

8 bit color system ..... 2795



**RECOGNIZE! .....\$475**

Recognize! omnifont OCR software does your typing for you by reading virtually any scanned document into your Macintosh™ computer. Even documents with mixed graphics and text, headlines, multiple columns, bold and italic type are accurately scanned and automatically formatted for use in your favorite word processing application.

### IOMEGA

Benouli II Transportable 44 Meg CALL

Benouli II Dual 44 Meg ..... CALL

### I-PROTECT

Radiation Shield for SE/Plus ..... 69

Radiation Shield for MAC II ..... 75

### KENSINGTON

Turbo Mouse ..... 106

Mac II Stand & Cables ..... 62

Masterpiece Mac II ..... 119

### KEYTRONICS

MacPro Plus ..... 129



**PERSONAL SCAN .....\$669**

One-of-a-kind! Breakthrough combination of full-page hand-held and 10 page sheet feed scanner in one unit. Includes hand-held scanner, auto sheet feeder, Recognize! omnifont OCR software and cables.

### KINETICS

Ether Port II ..... 484

### KODAK

Diconix M150 Portable Printer ..... 499

Color Printer ..... 1172

### MARSTEK

Mac-800 ..... 399

### MASS MICRO

ColorSpace ..... CALL

Data Pak ..... 699

QuickImage 24 ..... 699

### MEGA GRAPHICS

19" Rival System, SE, SE/30, II ..... 1085

16" Sony Color II, IIfx, SE30 ..... 2569

### MICROTECH

**FULL LINE AVAILABLE ..... CALL**

MSF300ZS Color Scanner with

PhotoShop ..... 1798



**ABATON INTERFAX 24/96 .....\$335**

Award Winner Best Communication Product of 1989, the Interfax 24/96 is HOT. Includes 2400 bps data modem with MNP level 5 error correction that sends and receives faxes at 9600 bps. Full one-year warranty on parts and labor.

### MICROTECH

Nova (full line) ..... **LOWEST PRICES**

Europa ..... **LOWEST PRICES**

Memory ..... **LOWEST PRICES**

CD ROM ..... **LOWEST PRICES**

### MICROTOUCH

UnMouse ..... 179

### MOUSE SYSTEMS

PageBrush Scanner ..... 559

Little Mouse or ADB Mouse ..... 72

### NEC

MacSync ..... 499

CDR35 Portable CD Rom ..... 475

CDR72 Intersect External CD Rom 699

ColorMate PS ..... 6775

Silent Writer 2 model 90 ..... 1795

### NEWGEN

Turbo PS 400 ..... 3999

Turbo PS 480 ..... 5549

### ORCHID TECHNOLOGY

MacSprint II ..... 209

MacFax/Modem 9600 Baud ..... 435

### PLI (PERIPHERAL LAND)

Infinity 40 Removable Hard Drive .. 699

Cartridges ..... 79

Optical Drive 635 Mb ..... 3795

### PRACTICAL SOLUTIONS

Cordless Mouse ..... 92

Strip Switch ..... 49



**ABATON 300 COLOR & GRAYSCALE SCANNER .....\$1699**

The new affordable 300/color scanner is designed to handle all of your scanning needs. Provides 24 bit color and 256 grayscale, line drawings and text. Free additional 90-day on site warranty. Bundled with award winning Photoshop. (includes interface kit)

### PROMETHEUS

24/96 Fax/Modem ..... 265

ProModem 2400 Modem ..... 115

ProModem 9600 M Plus MNP ..... 665

96/96 Fax/Modem ..... 665

Ultima 14,400/9600 Modem/Fax ... 635

### QMS

ColorScript 100 ..... 7495

PS 810 ..... 2995

### QUICKTEL

2400 Baud Modem inc. software ... 119

24/48 Modem/SendFax & software 129



**PAGEBRUSH COLOR .....\$559**

The PageBrush/Color scanner scans up to 4096 colors with 400 dpi. Image enhancement and processing are possible with features like palette optimization, brightness/contrast control and gamma and hysteresis correction. The PageBrush/Color solution is a complete image studio.

### RADIUS

**FULL LINE AVAILABLE ..... CALL**

### RASTEROPS

**FULL LINE AVAILABLE ..... CALL**

24L System 19" Trinitron ..... CALL

Accelerator 16M DRAM Exp Kit ..... CALL

ClearVue/GS Grey Scale 19" ..... CALL

ClearVue/SE System 19" ..... CALL

ClearVue/II System 19" ..... CALL

Video Color Board 364 ..... Special 899



**ABCOM CARRYING CASES .....\$76**

These sturdy cases are constructed of cordura nylon, backed with 1" foam padding and use metal hardware and heavy duty zippers for the best protection available. (navy or black)

### SHARP

JX-450 Color Scanner & Int. .... 5195

JX-300 Color Scanner & Int. .... 2395

Color Printers ..... Call

### SHIVA

Fast Path 4 ..... 1899

### SIMMS

1 Meg.Simms 100, 80,70 ns ..... Call

### SONY

1304 Color Monitor ..... 689

### SUPRA

2400 Baud External Modem ..... 109

2400 Baud Ext. MNP ..... 155

### TOTAL SYSTEMS

Gemini 20MHz 030 ..... CALL

Gemini 25MHz 030 ..... CALL

### UMAX

UC300 Scanner ..... 1675

### WACOM

Digitizing Tablets ..... CALL

6"x9" Tablet ..... CALL

12"x12" Electrostatic ..... CALL

12"x12" Standard Surface ..... CALL



11050 Randall S

Sun Valley, CA 91352

(818) 501-6581

Federal ID# 95-4183196

**Internat'l Reseller Program** • We ship regularly to 65 countries worldwide  
 • Call about our special pricing



## SAY YOU SAW IT IN **MACWORLD**.

To purchase products advertised in this issue call the phone numbers below or use the reader service number for our Fast Facts Product Information Card located on the next page.



Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone
206	Abacus	50	800/666-STAT	237	Insignia Solutions	72	—	212E	Paper Direct	64	—
24	AbraMacDabra	54	—	227	Intelligent Resources	135	708/705-9388	25	Personal Training Systems	42	800/TEA-CH99
242-243	Aldus	—	—	30	International Business Software	221	800/733-2822	89	Pinnacle Micro	266	800/553-7070
32-33	Apple	—	—	166-167	Jasmine	126	800/347-3228	92	Portfolio Systems	56	914/876-7744
35	Apple	—	—	BC	Kensington Microware	255	800/535-4242	24	Precision Type	53	—
37	Apple	—	—	73	Key Tronic	289	800/262-6006	10-11	Quark	65	800/356-9363
268-269	APS	—	800/233-7550	28-29	La Cie	199	800/999-0143	112	Quark	295	800/356-9363
291	Ares Software	44	—	67	La Cie	197	800/999-0143	6-7	Radius	178	800/227-2795
291	Ark International	49	800/232-6221	182	La Cie	52	800/999-0143	68	Radius	40	800/227-2795
62	Asante Technologies	24	800/662-9686	184	LaserMaster	342	612/944-9696	38	RasterOps	15	800/468-7600
90	Aura Systems	120	800/365-AURA	74-81	Mac Zone, The	70	800/248-0800	34	Salient	39	—
262	Aurora Systems	18	—	94-95	MacAcademy	168	800/527-1914	26	Secure-It	239	800/451-7592
101	Bimillennium	233	800/488-8662	175-180	MacAvenue	—	800/926-6221	5	Shiva Corp.	—	800/458-3550
266	Bottomline	—	900/420-3636	267	MacCenter	189	800/950-3726	91	Sigma Designs	62	800/933-9945
IBC	Caere Corp.	1	800/535-SCAN	52	MacConnection	—	800/334-4444	65	SoftSync/ BLOC Publishing	367	800/993-2537
217	Calcomp	3	—	229	MacFriends	109	800/622-8804	221	SPSS, Inc.	210	800/45-STATS
265	Cambridge Computer (ERI Direct)	19	800/535-3252	82	MacFriends	58	800/622-8804	200	Storage Dimensions	127	408/879-0300
198-199	CDA Computer Sales	32	800/526-5313	96	MacFriends	270	800/622-8804	200	Storage Dimensions	176	408/879-0300
22	CE Software	338	—	292	Macintosh Product Registry	—	—	222	Summit Audio Tapes	—	—
194	Clarix	—	800/544-8554	256-257	MacLand	264	800/333-3353	162-163	Supermac	74	—
240	CompuServe	319	800/848-8199	260	MacProducts USA	175	800/622-3475	42	Symantec	141	800/228-4122
193	Computer Associates	10	—	264	MacSource	48	—	214-216	Symantec	237	800/228-4122
234	Contemporary Cybernetics	188	804/873-0900	8	MacTable/ Scanco	296	800/722-6263	13	3M Storage Data	23	800/888-1889
16	Curtis Manufacturing	20	603/532-4123	261	MacTel Technology	142	800/950-8411	45	Texas Instruments	313	800/527-3500
12	Dantz Development	259	415/846-0293	114-123	MacWarehouse	240	800/455-9677	258-259	Thirdwave	114	800/284-0486
224	Dataviz	36	203/268-0030	40	Mainstay	284	818/991-6540	228N	Tri-Data	69	—
213N	Dayna Communications	232	801/531-0203	108	Mass Micro Systems	207	800/522-7979	207	Truevision	38	—
9	DCA MacIRMAtrac	71	—	110	Mathsoft	34	800/MATHCAD	97-100	Wordperfect	—	800/526-5034
102	Deltapoint	51	—	51	Meca	37	—	191	Xante	—	—
19	Deneba Software	346	800/6CANVAS	46	Microcom	41	—				
27	Deneba Software	57	800/6CANVAS	215	Micronet Technology	116	714/837-6033				
93	Design CAD, Inc.	336	918/825-4848	66	Microseeds	228	813/882-8635				
233	Diconix (Kodak)	377	—	210	Microsoft	—	800/541-1261				
290	Digital Vision	242	800/346-0090	IFC-1	Microsoft	—	800/541-1261				
265	Diskette Connection	79	800/654-4058	197	Microsoft	—	800/541-1261				
250-251	Dr. Mac, Inc.	368	800/825-6227	171	Microtech International	80	—				
86	Eastman Kodak	271	800/344-0006	106	Microtek Labs	90	—				
20-21	Ehman, Inc.	144	800/257-1666	189	Microtek Labs	63	—				
41	Emac	68	—	46	Mircocom	41	—				
70-71	Epson	—	800/922-8911	84-85	Mirror Technologies	243	800/633-4450				
249	ERI Direct	184	800/535-3252	47	Mirror Technologies	125	800/654-5294				
219	Fifth Generation	364	800/873-4384	50	Mouse Systems	105	—				
64A-64L	Fifth Generation	—	800/873-4384	231	NEC Technologies	314	800/NEC-INFO				
48-49	Frame Technology	60	—	173	NEC Technologies	66	800/NEC-INFO				
26	GDT Softworks	317	800/663-6222	293	NewGen	244	714/641-8900				
104	Generation Systems	170	800/325-5811	293	NewGen	246	714/641-8900				
263	Hard Drives International	—	800/776-DISK	228a-228b	NewGen	—	714/641-8900				
202-205	Hewlett Packard	—	—	246	Nikon	67	—				
245	IDG Books	—	—	4	NoRad	292	800/624-8999				
36	Image Club	—	403/262-8008	186	Ocean Microsystems	33	—				
14-15	In Focus	5	800/327-7231	83	OCLI	374	—				
223	Infoworld	298	—	12	Odesta	238	800/334-6041				
				44	Orange Micro	31	—				
				169	Pacific Data	—	619/597-4633				

**CLIP OUT  
TO USE PHONE  
NUMBERS  
FOR FUTURE  
REFERENCE**





# A QUICK & EASY **PRODUCT INDEX** FROM MACWORLD.

Simply use this index to find the page or advertiser of the products which interest you. Then, use the reader service number for our FastFacts Product Information Card located on the preceding page.

**PRODUCT INDEX**

Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.
<b>SOFTWARE</b>			<b>HARDWARE</b>			<b>SERVICES</b>		
<b>BUSINESS</b>			<b>COMPUTER SYSTEMS</b>			<b>ON-LINE</b>		
206	Abacus	—	26	GDT Software	317	240	CompuServe	319
24	AbraMacDabra	54	<b>PRINTERS</b>			<b>TRAINING</b>		
242-243	Aldus	—	198-199	CDA Computer Sales	32	94-95	MacAcademy	168
IBC	Caere Corp.	1	229	MacFriends	109	<b>ACCESSORIES</b>		
194	Clarix	—	82	MacFriends	58	<b>FLOPPY DISKS/STORAGE</b>		
193	Computer Associates	10	96	MacFriends	270	13	3M Storage Data	23
102	Deltapoint	51	233	Diconix (Kodak)	377	<b>FURNITURE</b>		
48-49	Frame Technology	60	86	Eastman Kodak	271	8	MacTable/ Scanco	296
40	Mainstay	284	70-71	Epson	—	<b>MISCELLANEOUS</b>		
110	Mathsoft	34	202-205	Hewlett Packard	—	291	Ark International	49
51	Meca	37	184	LaserMaster	342	<b>MAIL ORDER</b>		
210	Microsoft	—	189	Microtek Labs	63	268-269	APS	—
IFC-1	Microsoft	—	231	NEC Technologies	314	262	Aurora Systems	18
197	Microsoft	—	173	NEC Technologies	66	266	Bottomline	—
12	Odesta	238	293	NewGen	244	265	Cambridge Computer (ERI)	19
92	Portfolio Systems	56	293	NewGen	246	198-199	CDA Computer Sales	32
26	Secure-It	239	246	Nikon	67	265	Diskette Connection	79
65	SoftSync/BLOC Publishing	367	169	Pacific Data	—	250-251	Dr. Mac, Inc	368
221	SPSS, Inc	210	45	Texas Instruments	313	249	ERI Direct	184
<b>VERTICAL</b>			<b>BOARDS</b>			263	Hard Drives International	—
206	Abacus	50	62	Asante Technologies	24	74-81	Mac Zone, The	70
24	AbraMacDabra	54	104	Generation Systems	170	175-18	MacAvenue	—
101	Bimillennium	233	44	Orange Micro	31	267	MacCenter	189
65	SoftSync/BLOC Publishing	367	68	Radius	40	52	MacConnection	—
<b>DATA MANAGEMENT</b>			38	RasterOps	15	229	MacFriends	109
12	Odesta	238	<b>DIGITIZERS/SCANNERS</b>			82	MacFriends	58
<b>WORD PROCESSING</b>			207	Truevision	38	96	MacFriends	270
97-100	Wordperfect	—	217	Calcomp	3	256-257	MacLand	264
<b>CAD/CAM</b>			202-205	Hewlett Packard	—	260	MacProducts USA	175
93	Design CAD, Inc	336	67	La Cie	197	264	MacSource	48
<b>COMMUNICATION</b>			106	Microtek Labs	90	261	MacTel Technology	142
30	International Business Software	221	<b>DISPLAY</b>			114-123	MacWarehouse	240
89	Pinnacle Micro	266	90	Aura Systems	120	212	Paper Direct	64
<b>EDUCATIONAL</b>			182	La Cie	52	258-259	Thirdwave	114
94-95	MacAcademy	168	46	Microcom	41			
25	Personal Training Systems	42	84-85	Mirror Technologies	243			
<b>-fonts</b>			6-7	Radius	178			
291	Ares Software	44	68	Radius	40			
36	Image Club	—	91	Sigma Designs	62			
24	Precision Type	53	<b>MODEMS</b>					
<b>GRAPHICS/DTP</b>			5	Shiva Corp.	—			
242-243	Aldus	—	<b>HARD DISKS/STORAGE</b>					
194	Clarix	—	234	Contemporary Cybernetics	188			
102	Deltapoint	51	20-21	Ehman, Inc	144			
19	Deneba Software	346	219	Fifth Generation Systems	364			
27	Deneba Software	57	166-167	Jasmine	126			
290	Digital Vision	242	28-29	La Cie	199			
48-49	Frame Technology	60	215	Micronet Technology	116			
36	Image Club	—	171	Microtech International	80			
14-15	In Focus	5	47	Mirror Technologies	125			
25	Personal Training Systems	42	186	Ocean Microsystems	33			
10-11	Quark	65	89	Pinnacle Micro	266			
<b>NETWORKING</b>			200	Storage Dimensions	127			
213	Dayna Communications	232	200	Storage Dimensions	176			
9	DCA Macimatrac	71	<b>VIDEO</b>					
5	Shiva Corp.	—	227	Intelligent Resources	135			
228	Tri-Data	69	108	Mass Micro Systems	207			
<b>LANGUAGES</b>			44	Orange Micro	31			
42	Symantec	141	38	RasterOps	15			
214-216	Symantec	237	207	Truevision	38			
<b>UTILITIES</b>			<b>EXPANSIONS/UPGRADES</b>					
291	Ares Software	44	90	Aura Systems	120			
22	CE Software	338	<b>INPUT DEVICES</b>					
12	Dantz Development	259	16	Curtis Manufacturing	20			
219	Fifth Generation Systems	364	41	Emac	68			
26	GDT Software	317	73	Key Tronic	289			
66	Microseeds	228	50	Mouse Systems	105			
34	Salient	39	<b>MISCELLANEOUS</b>					
26	Secure-It	239	83	OCLI	374			
<b>MISCELLANEOUS</b>			169	Pacific Data	—			
IBC	Caere Corp.	1						



# MacLand <sup>T.M.</sup>



**America's Largest Macintosh Hardware Source**  
Prices effective through May 1991

## Laser Printer Sale



**ScriptTEN PostScript<sup>®</sup>  
Laser Printer**

**\$1,599**

- 10 Pages per minute
- 11 Font Families (35 typefaces)
- 3 megs of RAM
- Solid Blacks for graphics
- Letter, Legal and transparencies



**CrystalPrint  
MacPublisher  
Laser Printer**

**\$1,699**

- 8 Pages per minute
- 11 Font Families (39 typefaces)
- 2 megs of RAM
- Adobe type one support
- Solid Blacks for graphics
- Letter, Legal and transparencies



**CrystalPrint  
Publisher II  
Laser Printer**

**\$2,125**

- 8 Pages per minute
- 11 Font Families (39 typefaces)
- 3 megs of RAM
- Adobe type one support
- Solid Blacks for graphics
- Letter, Legal and transparencies



**Microlaser  
PostScript<sup>®</sup> Laser Printer**

**PS17 \$1,449**  
**PS35 \$1,749**

- 1.5 Megabytes of RAM
- 6 pages per minute
- 17 or 35 typefaces available
- Letter, Legal and transparencies

**AppleTalk Interface Included!**



**NEC  
SilentWriter 90**

**\$1,799**

- 6 pages per minute
- Adobe PostScript
- 35 scalable fonts
- 2 Megabytes of RAM
- Letter, Legal, Envelopes, Transparencies, and Labels



**QMS-PS<sup>®</sup> 410  
PostScript Laser Printer**

**\$1,999**

- 2 Megabytes of RAM
- 4 pages per minute
- Letter, legal, envelopes, and transparencies
- Auto switching between Macintosh and IBM.

PostScript<sup>®</sup> is a registered trademark of Adobe Systems Incorporated.

**Visa, MasterCard, and American Express** accepted NO surcharge. Your Credit Card will not be charged until your order is shipped. We accept COD orders, additional \$5.00 charge. AZ residents add 6.5%. All shipments made by Federal Express

Standard Air which is 1 to 2 day service. COD's Shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.



# Sale

## Accelerators

DayStar Digital	
Fast Cache IIci	\$269
PowerCache IIci 40 MHz	\$929
PowerCache IIci 50 MHz	\$1,649
25 MHz Powercard 030	\$1,125
33 MHz Powercard 030	\$1,275
50MHz Powercard 030	\$1,949
Radius	
Accelerator 16 for Plus/SE	\$599
Accelerator 25 for SE	\$999

## Fax Modems

Abaton	
Interfax Modem 24/96	\$289
Dove	
24/96 Fax Modem	\$279
Orchid	
24/96 Fax Modem	\$419

## Scanners

Microtek	
300GS	\$1,249
300ZS	\$1,699
Hewlett Packard	
ScanJet with interface	\$1,595

## Hard Disk Drives

### Special

Imprimis	
TWO YEAR WARRANTY	
Imprimis Drives Now Have A Two Year Warranty.	
Effective on all drives purchased after 3/1/91	Internal External
MacWren 300	\$1,349/\$1,449
MacWren 330	
Runner	\$1,499/\$1,599
MacWren 600	\$1,799/\$1,899
MacWren 1.2 Gig	\$2,799/\$2,899

### Special

Quantum	
TWO YEAR WARRANTY	
Quantum 40	\$299/\$399
Quantum 105	\$399/\$459
Quantum 120	\$589/\$689
Quantum 170	\$679/\$779
Quantum 210	\$789/\$889

## UPS

Safe Power Systems	
Safe 250	\$189
Safe 400S	\$369

## Monitor Systems

Magnavox	
TWO YEAR WARRANTY	
14" Color Monitor with 8 bit Video Interface Mac II family†	\$699
14" Color Monitor with 24 bit Video Interface Mac II family†	\$799
SE/30 8 bit Video System	\$799
Radius	
Two page display w/Interface	\$1,299
Pivot with Interface	\$1,199
RasterOps	
264 ColorBoard*	\$399
364 ColorBoard*	\$879
8S ColorBoard	\$349
24S ColorBoard	\$549
24L ColorBoard	\$2,699
ClearVue Classic or LC	\$1,269
We carry the full line. Please call for the lowest price!	
SamSung	
15" Full Page Monitor with Video Interface	\$399
Now Available for Mac Plus, SE, SE/30 and Mac II Family.	
Isi with nubus adapter	\$499
Limited Supply—Offer good while supplies last	
Sigma Designs	
PageView GS	\$629
PageView II, SE, SE/30	\$799
L-View 19" Multi-Mode Mac II Family and SE/30	\$1,349
SilverView Monochrome	\$1,499
SilverView GrayScale	\$1,799

## Removable Disk Drives

### SyQuest 42 Removable \$439

cartridge not included



### SyQuest Cartridges \$64



## Printers

### Hewlett Packard DeskWriter \$679



NEC SilentWriter 90	\$1,799
QMS	
QMS-PS® 410 PostScript	\$1,999
Qume	
CrystalPrint Publisher II	\$2,125
ScriptEN PostScript	\$1,599
Seiko	
Smart Label Printer	\$199
Texas Instruments	
PS17 Microlaser with Interface	\$1,449
PS35 Microlaser with Interface	\$1,749

## Input Devices/Mice

Articulate Systems	
Voice Navigator	\$599
Kensington	
Turbo Mouse	\$99
Curtis	
MVP Mouse ADB	\$89
Mouse Systems	
ADB Track Ball	\$65
Little Mouse	\$70
PageBrush Mouse/Scanner	Call

## Keyboards

Key Tronic	
Mac Pro Plus	\$139
Data Desk	
101 Keyboard	\$125

## Modems

CMS 2400 Baud Ext.	\$109
Anchor 2400	\$159

## Monitors

Magnavox	
TWO YEAR WARRANTY	
14" Color Monitor	\$439
NEC	
MacSync 14" Color Monitor	\$439
Seiko	
14" Color Monitor	\$589

\* while supplies last  
† requires nubus card

For Ordering and Technical Support Call 1-800-333-3353 (FAX #602-345-2217)



4685 South Ash Avenue, Suite H-5, Tempe, Arizona 85282 (602) 820-5802



Circle 264 on reader service card



# We want to help you



2 Gigabyte DATadrive™ with Retrospect—backup an entire network on a single DAT cartridge.

## SyQuest, Tape, DAT, Optical

45R SyQuest, one cartridge	\$559
45DR Dual SyQuest, two cartridges	1069
150t Teac Tape Backup	679
DATadrive™ 2.0GB DATBackup	1699
OptiDisk™ 600 Sony Optical Drive	3499
OptiDisk™ 1000 Tahiti Optical Drive	4399



The 45R uses SyQuest cartridges allowing for easy transfer of large files. Available in combo drives or as dual removables.

OptiDisk™ 600—great for archival, backup, color image manipulation and transfer, CAD and network usage. Take a whole color magazine on one cartridge to a service bureau!



## Internal & External Drives

		Internal	External
40	(Quantum)	\$299	\$429
40L*	(Maxtor)	299	429
52L*	(Quantum)	369	499
80L*	(Maxtor)	429	559
105	(Quantum)	419	549
105L*	(Quantum)	519	649
120	(Quantum)	679	809
170	(Quantum)	749	879
210	(Quantum)	829	959

\*Low power internal drives for Classic, IIsi & LC—meet Apple power specs.

## Seagate MacWren Drives

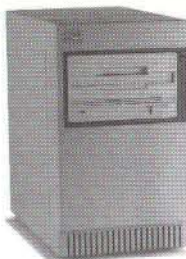
	Internal	External
300	\$1269	\$1439
330	1519	1689
330*	1699	1829
425	1649	1779
415*	1799	1929
600	1729	1899
650	1899	2069
1000	2799	2969



\*Highest capacity internal drives for Mac cx, ci, SE and SE30. These also work in the II and IIfx.

## Combo Drives

105/45R	\$1049
170/150t	1419
170/DAT	2399
210/DAT	2499
425/45R	2299
425/DAT	3349



All drives bundled with Disk Manager software for partitioning and formatting, including mounting partitions, password protection and full defect management. Drives also include 12Mb of public domain and shareware. External drives are internally terminated; external termination—\$19.

## UltraCombo

300/45R	\$1999
300/150t	2049
600/DAT	3799
650/Optical	5699
1000/DAT	4799
1000/Optical	6699
2000/DAT	7499

Over 30 combinations available.

Combo 170/150t shown at right. Tape backup and traditional storage in one space-saving unit.



UltraCombo 1000/Optical (shown at left above) is an excellent choice to work as a network server, or for graphic design and pre-press applications. Another good choice for a network server is a DAT Combo drive—backup the server and the entire network on a single DAT cartridge. All Third Wave drives have durable, attractive, high-quality platinum cases as shown.

## Macworld finds our drives quietest.

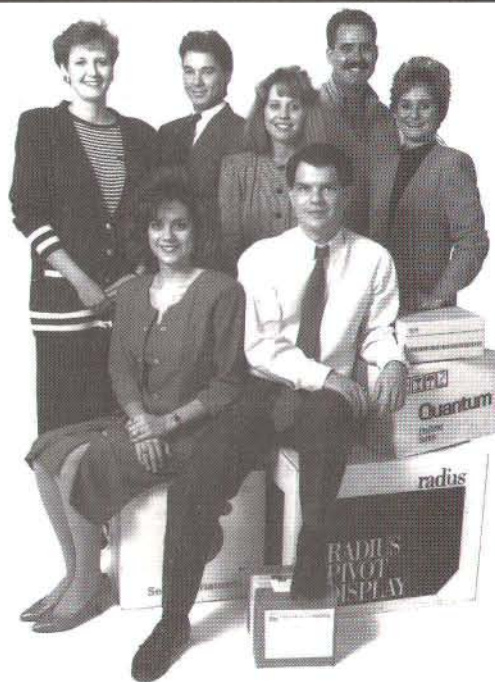
Macworld has this to say about Third Wave mid-range hard drives recently tested.

"...Especially quiet, the quietest of the 64 drives tested...fast—three of the twelve fastest tested were Third Wave's...and finally, 'a good bargain.'"

-Macworld, March 1991

## Media

Teac CT600H (60mb)	\$17
Teac CT600N (150mb)	24
SyQuest SQ400	71
4mm DAT Tape	19
Optical Cart (ISO) 512 / 1024	159



Every member of our competent team will assist you quickly, knowledgeably, pleasantly and thoroughly. Clockwise from top left: Jill Luke, accounting/ Brian O'Neal, western region sales/ Monica Matthews, central region sales/ Tilo Peters, eastern region sales/ Pam Vesely, shipping manager/ Robert Jagitsch, president/ Wendy Jagitsch, accounting.



## Third Wave Computing

1826B Kramer Lane, Austin, Texas 78758  
(512) 832-8282 • (512) 832-1533 (FAX)

Most deliveries via Federal Express.



(800) 284-0486



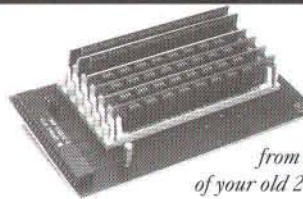
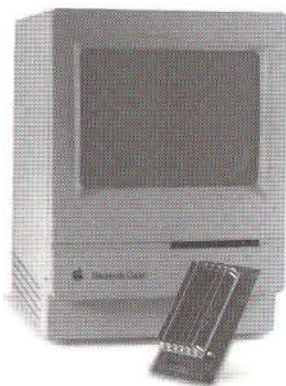
# with your homework.

**As a serious buyer, you have to make educated choices.**

Deciding which technology will change the way you live and work isn't easy.

We can help by explaining product benefits in relation to engineering usage and budgetary considerations. Prompt, knowledgeable service, speedy delivery, innovative products, and great prices: *Call Third Wave when you need to make educated choices.*

## SIMMpack for the Classic



*SIMMpack, the new Classic upgrade board from Logica makes use of your old 256k SIMMs in 1mb Classics. Save at least \$50 and as*

*much as \$250 on every Classic by allowing the re-use of 256K SIMMs. The board has slots for four 256k SIMMs and two 1 mb SIMMs. Available in four configurations. Call for our worksheet explaining how to save big on Classic upgrades.*

### SIMMpack

Board only (0 mb)	\$45
(0 mb) with drive bracket*	63
(0 mb) w/40mb Maxtor	315
(0 mb) w/80mb Maxtor	445

*\*Remove SIMMs & drive from IIsi, install in Classic.*

**2mb SIMMs for the LC, IIsi, IICI now available.**

## SIMMs



*Third Wave is a major manufacturer of SIMMs. We manufacture a full line of memory products including 1 mb and 4mb SIMMs for all Macs, the IIfx, NTX printers, and IBM SIMMs (1x9, 4x9 and PS2) as well as SIPP. Call us for direct manufacturer pricing on all your memory needs.*

## XAPSHOT—the quick-est way to bring a high-quality 24 bit image into your Mac.

*Take a look at the new XAPSHOT still video camera from Canon. At just \$429, XAPSHOT allows you to import high quality still video images to your Mac without a scanner! Xapshot can store up to 50 digital video images on a 2" diskette. Great for video presentations, MacroMind Director, newsletter & newspaper publishing.*



## Pre-press Color Separation Equipment

*This equipment is designed for firms engaging in color print reproduction, such as publishing companies, advertising agencies, graphic design studios, service bureaus, in-house graphics departments, video production companies, and CAD studios.*

*With an uncalibrated monitor, what you see isn't what you get. The calibrator lets you set your monitor so that the color on screen is as close as possible to actual ink and screen combination colors. Conditions vary from time to time, depending on room lighting, monitor settings, etc. This is why you'll need your screen calibrator ready when you start a new job. Works with Apple, Raster Ops and Radius color monitors. ColorPoint printers produce a beautiful glossy color laser print suitable for proofing color work or producing comprehensive layouts. The print quality is better than some other printers costing twice as much. The Nikon Slide scanner produces a clear, professional quality scan suitable for color or black and white printing. Several of the photos in this ad were produced using one.*

Seiko ColorPoint PS printer (letter size)	\$5949	Call for prices on Tektronix Phaser
Seiko ColorPoint PS printer (tabloid size)	8499	PX-2, SX-2 and ColorQuick printers.
Nikon LS 3500 Film Scanner	9365	Also available, HP PaintJet color
SuperMatch Color Calibrator	499	printers.

## Video, Printers, Performance Add-ons



*See our complete line of video boards and monitors for every budget.*

DayStar Fastcache	\$279	ColorBoard 364	899
DayStar Powercards	Call	8L-24L Systems	Call
Radius Accelerators	Call	ClearVue Mono & Gray Scale	Call
TI MicroLaser PS35	1695	Radius Pivot, TPD19, TPD 21	Call
Microtek 300ZS Color	1799	SuperMac Video Systems	Call
Epson ES300C (600 dpi)	1799	Seiko Trinitron 14"	589
Ethernet Cards	Call	Sony 1304 14"	699
<b>RasterOps</b>		Ikegami Trinitron 19"	2195
24S-24Si-264 SE30	559/769/649	Ikegami 8- & 24-bit Systems	Call

**Circle 114 on reader service card**

## Third Wave Computing

(512) 832-8282 • (512) 832-1533 (FAX)

Graphic Design ©Three A. D. Inc., 1991. Photography ©Jack Puryear Photography, 1990/91, ©John D. Mitchell of Infocus Photography, 1991. This ad was produced using a Macintosh IIfx and SE30, with Third Wave removable drives, Quantum 105 internal drives, a Nikon LS slide scanner and a Microtek 300ZS color scanner. It was output on a Compugraphic 9600. Software used includes Adobe Illustrator, Photoshop and PageMaker. The product names are trademarks of their respective companies.

*Most deliveries via  
Federal Express.*



**(800) 284-0486**



# MacProducts USA

## 1 MB SIMMs \$44

Magic  
57450

LIFETIME GUARANTEE 70/80 ns. Call for most current price.  
1 MB fX SIMMs.....\$47  
4 MB SIMMs/ 4MB Ifx SIMMs.....\$225/\$225  
3 MB Portable RAM.....\$899  
Portable RAM 1-8 MB.....call  
4 MB Classic upgrade.....\$199

## Magic Networking



MagicNet (localtalk).....\$18  
Magic EtherNet Thin/Thick.....\$249  
Magic EtherNet Thick/10 BaseT.....\$249

## Magic Communications



Fully Hayes compatible. Includes two year warranty.  
2400/1200/300 baud. Auto answer/dial.....\$75  
2400/4800 Send/Fax/Modem.....\$89  
2400/9600 Send/Fax/Modem.....\$99  
2400/9600 Send & Receive Fax Modem.....\$179

V.42 bis MNP-5 2400 Modem: send and receive up to 9600 baud. LAPM & MNP error correction, asynchronous operation, auto adaptive equalization. Two year warranty.  
V.42 bis MNP-5 Modem.....\$175

## Magic Hard Drives \*\*\*\*



A/UX compatible, includes Disk Manager Mac formatting software, 10Mb free software, surge protection, External SCSI selector, & Two year warranty.

Quantum	Internal	External
40 MB hard drive.....	\$279	\$399
52 MB low profile HD.....	\$319	\$429
80 MB hard drive.....	\$429	\$529
105 MB hard drive.....	\$429	\$529
105 MB low profile HD.....	\$529	\$629
170 MB hard drive.....	\$799	\$899
210 MB hard drive.....	\$889	\$989
300 MB CDC hard drive.....	na	\$1850
300 MB WrenRunner.....	na	\$1999
600 MB hard drive.....	na	\$2350
1.2 gig hard drive.....	na	\$2795
Internal kit \$29		

## Magic 45R Removable \*\*\*\*



Portable, fast, & affordable removable media.  
Syquest mechanism. 2 year warranty.

45 MB removable drive.....\$499  
Syquest cartridge.....\$69

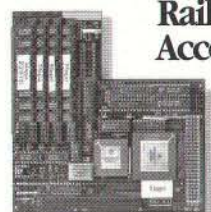
## Magic Tape Backup \*\*\*\*

MagicTape 60.....\$679  
MagicTape 150.....\$699  
MagicTape 525.....\$999  
MagicTape 1.3 gig/ 24 gig.....\$1895/\$2895

## MacProducts USA Advance Replacement Warranty

24 hour replacement of your damaged drive\*.  
Virex bundle only \$15 with any Magic purchase.  
not included in drive price.

## RailGun 030 Accelerators



4 X faster  
than Dove  
Marathon

We can give you the original Mac new performance with our Magic RailGun '030' Accelerator for the Plus, SE, & Classic.  
16.25, & 33 MHz RailGun.....starting at \$499  
16 MHz 68881/68882 coprocessor.....\$99/\$149

## Magic Video Solutions

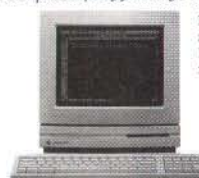
MagicView 19" B&W Plus W/card.....\$999  
Magic 8-bit color card II/ SE30.....\$269/\$329  
Magic 19" 8-bit color card for II.....\$499  
14" NEC MacSync with tilt/swivel.....\$449  
14" Goldstar with tilt/swivel.....\$379  
19" Color Triniton Monitor.....\$2099

## Magic Scanners

MagicScan 256 grayscale with Imagestudio software \$1099  
MicroTek 3002S 24-bit Color with Photoshop.....\$1749

## Macintosh CPU's

Mac Classic.....\$975.....36 month lease \$30  
Mac Classic 2/40.....\$1349.....36 month lease \$44  
Mac LC.....\$1799.....36 month lease \$64  
LC coprocessor board w/ purchase of coprocessor.....\$29  
Mac IIx 2/40.....\$2749.....36 month lease \$92  
Mac IIx 5/80.....\$3399.....36 month lease \$115  
Mac IIci (call for new price).....\$4199.....36 month lease \$140  
Mac IIcx (call for new price).....\$6299.....36 month lease \$210



Leasing prices reflect avg monthly rate.  
Businesses only. \$3000 minimum purchase.

## HARDWARE & SOFTWARE • MacProducts USA carries over 8,000 products for your Macintosh

### Accelerators

LC coprocessor board w/purchase of CP 29  
25MHz 030 II, IIfx, IIfx 1099/1499  
Daystar 50MHz 030 II, IIfx, IIfx 2199/2599  
Daystar FastCache IIfx 269  
Daystar PowerCache IIfx 40MHz 969  
Daystar SCSI Powercard 0 MB 1133  
Magic RailGun 030 Accelerator 16 499  
Magic RailGun 030 Accelerator 25 699  
Magic RailGun 030 Accelerator 33 1099

### Connectivity/Network

3 Com EtherLink/IB 431  
Asante Maccon+ IIE, ET 345  
Asante 10 T Hub 989  
Avamar MacMainFrame II Coax Gateway 1789  
Cayman Gator Box 2019  
Cayman Gator Card Ethernet 449  
Dayna EtherPrint EP-T Single 385  
Dayna Port E/I 295  
Dayna Port SI 399  
DCA MacRMA II 835  
Farallon StarController EN 1594  
Farallon EtherNet Card 419  
IBS DataClub 10 Pack 549  
Magic MaciNet Node 8Pin 17  
NuvoLink NuvoLink II 285  
NuvoLink TurboStar 789  
Oracle Mac Developer 1725  
Oracle Mac DB 411  
Racal-Interlan Mac Connect 337  
Shiva Fastpath 4 1999  
Silka Taps Network Bundle IBM 169  
Silka Taps Network Bundle Mac 199  
White Pine Exodus X Windows 329

### CD Rom

CD Technology Porta Drive 685  
Griener Encyclopedia Encyclopaedia 229  
NEC CD-R-72 Drive/Interface 789  
NEC Port CDROM/Interface 483  
Toshiba CD Rom Drive 759  
Wayzata CIA WorldFact Book 95  
Whole Earth Catalogue 87  
Many Others Available call

### Digitizers

AudioMedia 729  
Calcomp 12x18 Tablet 729  
Calcomp WIZ Tablet 139

### Farallon MacRecorder

Farallon MediaTracks 159  
Kurta 8x511 333

### Emulation/Translation

Insipia Access PC 63  
Insipia SoftPC with AT/EGA 339  
Orange Micro Mac 386 1745

### Mouse/Keyboard

Abaton Pro Point 88  
Advanced Gravis MouseStick ADB 60  
Apollon Mouse Pro Pen ADB 67  
CH RollerMouse 78  
Curtis MVR Mouse 85  
DataDesk Mac 101 ADB 137  
Kensington TurboMouse 110  
Keytronic MacPro Plus Keyboard 133  
Keytronic TrakPro Keyboard 219  
Micro Systems LittleMouse ADB 76  
MouseSized Mac Trac ADB 79

### Modems/Telecommunication

Abaton Interfax 24/96 399  
AE DataLink External Fax/MNP 249  
AE DataLink Internal 2400 199  
AE Quadralink 199  
HP PaintWriter 1119  
Hayes Ultra SmartModem 9600 865  
Hayes V Series 9600 V.42BIS x .25 715  
Incomm Internal 2400 Modem 99  
Mac 2400 with Send/Fax 98  
Orchid Technologies Fax Modem 439  
Practical Peripherals 9600 V.32/V.42 519  
Prometheus ProModem 2400 Internal 196  
Shiva Netmodem V.32 1429  
Telebit T1000 9600 Baud 625  
US Robotics Courier V.32/9600 675  
US Robotics Courier HST 14.4 V.42BIS 999  
US Robotics Courier HST II 999

### Display/Video Systems

19 Triniton Monitor 2399  
Amdek PowerPage Card II, SE, SE30 289  
Amdek 14 White Monitor 169  
Calcomp 21 Color 8 Bit System 4599  
Calcomp 21 Grey 8 Bit System 2269  
Magic 8 bit color 19  
Magic 8 bit color 19 499  
Magic 8 bit color SE/30 329  
Mass Micro Colorspace/II 1639  
Mass Micro Easy Video 8 445

### Mass Micro QuickImage 24

NEC MacSync 14 Color HC 187  
Radius Direct Color 24 Board 333  
Radius Fivd Display 779  
Radius Precision Color Calibrator 555  
Radius QuickColor Graphics Accelerator 475  
Radius Two Page Display 19 1089  
Radius Color Display 19 3349  
RasterOps 24L 19 System 5790  
RasterOps 264/SE30 Card 649  
RasterOps 364 Card 915  
RasterOps ClearView Classic 19 1579  
RasterOps ClearView GS Mac II 1579  
Sigma ColorMax 8/24 8 bit 19 4299  
Sigma L-View MultiMode 19 1399  
Sigma SilverView MacII 1499  
Supremac call

### Printers

Abaton LaserScript 2489  
Adobe PostScript Cartridge 322  
Calcomp 1023 Plotter 3899  
Calcomp ColorMaster+ PS 6603 6895  
HP DeskWriter 725  
HP LaserJet II 1755  
HP LaserJet II 1119  
HP PaintWriter 2099  
Kodak Diconix Color 4 1129  
Kodak Diconix M150 485  
Microtek TrueLaser Printer 1999  
NEC ColorSmart PS 439  
NEC SilentWriter II Model 90 1789  
NewGen PS480 5399  
Pacific MacPage PostScript AppleTalk 549  
Panasonic KXP4455 LaserPartner 2399  
QMS ColorScript 100 8mb Deluxe 7619  
QMS PS 410 2149  
Sekosha SP2000 Dot Matrix 8Pin 209  
TI MicroLaser 17 Postscript 1329  
TI MicroLaser 35 Postscript 1659

### Scanners

Caere Typist Hand Scanner 489  
Cannon JK-30F Scanner w/interface 1079  
Magic Scan 256 Grey 1069  
Microtek 3002 1769  
Sharp JX-300 2525

### Storage Solutions

AE 3.5 1.44K 224  
Bernoulli Transportable 44mb 1079

### Mass Micro QuickImage 24

NEC MacSync 14 Color HC 187  
Radius Direct Color 24 Board 333  
Radius Fivd Display 779  
Radius Precision Color Calibrator 555  
Radius QuickColor Graphics Accelerator 475  
Radius Two Page Display 19 1089  
Radius Color Display 19 3349  
RasterOps 24L 19 System 5790  
RasterOps 264/SE30 Card 649  
RasterOps 364 Card 915  
RasterOps ClearView Classic 19 1579  
RasterOps ClearView GS Mac II 1579  
Sigma ColorMax 8/24 8 bit 19 4299  
Sigma L-View MultiMode 19 1399  
Sigma SilverView MacII 1499  
Supremac call

### Printers

Abaton LaserScript 2489  
Adobe PostScript Cartridge 322  
Calcomp 1023 Plotter 3899  
Calcomp ColorMaster+ PS 6603 6895  
HP DeskWriter 725  
HP LaserJet II 1755  
HP LaserJet II 1119  
HP PaintWriter 2099  
Kodak Diconix Color 4 1129  
Kodak Diconix M150 485  
Microtek TrueLaser Printer 1999  
NEC ColorSmart PS 439  
NEC SilentWriter II Model 90 1789  
NewGen PS480 5399  
Pacific MacPage PostScript AppleTalk 549  
Panasonic KXP4455 LaserPartner 2399  
QMS ColorScript 100 8mb Deluxe 7619  
QMS PS 410 2149  
Sekosha SP2000 Dot Matrix 8Pin 209  
TI MicroLaser 17 Postscript 1329  
TI MicroLaser 35 Postscript 1659

### Scanners

Caere Typist Hand Scanner 489  
Cannon JK-30F Scanner w/interface 1079  
Magic Scan 256 Grey 1069  
Microtek 3002 1769  
Sharp JX-300 2525

### Storage Solutions

AE 3.5 1.44K 224  
Bernoulli Transportable 44mb 1079

### Dayna Dual Drive 1.2Mb/1.44Mb

Dayna Single Drive 1.44Mb 789  
Fujitsu 800K Floppy 130  
Inwin Magnetics 80mb Tape 619  
Kenneth Drive 2.4 319  
Kenneth Tech Report 191  
MassMicro DataPak II Removable 1099  
Micronet 1.3GB Tape Backup 2799  
Pinnacle Micro RE0650 Interface 3799  
PLI Infinity Turbo 45R 769  
PLI Turbo Floppy 275  
Ridome R45 Plus Removable 719  
Tectmar LaserVault 650 RWO Interface 4129

### Accessories, Disks, Ribbons

150 Meg Backup Tape 35  
60 Meg Backup Tape 22  
American Power 110SE UPS 215  
American Power 370ci UPS 339  
HP DeskJet Cartridges 17  
ImageWriter Color Ribbons 3  
ImageWriter Multi Color Ribbon 11  
Jet Fill Desk Jet Re-Fill 10  
Kensington Complete Line call  
MacDisk DS/DD Bulk 50 call  
PC Guardian Mac Anti Theft Pack 34  
Sony DS/DD Box 10 call  
Sony DS/DD Bulk 50 call  
Sony DS/HD Box 10 16  
Sony DS/HD Bulk 55  
Sopris SE Carrying Bag 41  
TI MicroLaser Toner Kit 55

### Software

Adobe Fonts call  
Adobe PhotoShop 505  
Adobe Type Manager 59  
Aldus PageMaker 4 499  
Claris CAD 559  
Disk Doubler 45  
DynePerspective 499  
FileMaker Pro 212  
Freedom of the Press 259  
Freehand 315  
Leonard SmartWorks 189  
MacProject II 345  
MacRendernMan 596  
Macromind Director 437  
MicroSoft Complete Line call  
MiniCad + 489

### Dayna Dual Drive 1.2Mb/1.44Mb

Dayna Single Drive 1.44Mb 789  
Fujitsu 800K Floppy 130  
Inwin Magnetics 80mb Tape 619  
Kenneth Drive 2.4 319  
Kenneth Tech Report 191  
MassMicro DataPak II Removable 1099  
Micronet 1.3GB Tape Backup 2799  
Pinnacle Micro RE0650 Interface 3799  
PLI Infinity Turbo 45R 769  
PLI Turbo Floppy 275  
Ridome R45 Plus Removable 719  
Tectmar LaserVault 650 RWO Interface 4129

### Accessories, Disks, Ribbons

150 Meg Backup Tape 35  
60 Meg Backup Tape 22  
American Power 110SE UPS 215  
American Power 370ci UPS 339  
HP DeskJet Cartridges 17  
ImageWriter Color Ribbons 3  
ImageWriter Multi Color Ribbon 11  
Jet Fill Desk Jet Re-Fill 10  
Kensington Complete Line call  
MacDisk DS/DD Bulk 50 call  
PC Guardian Mac Anti Theft Pack 34  
Sony DS/DD Box 10 call  
Sony DS/DD Bulk 50 call  
Sony DS/HD Box 10 16  
Sony DS/HD Bulk 55  
Sopris SE Carrying Bag 41  
TI MicroLaser Toner Kit 55

### Software

Adobe Fonts call  
Adobe PhotoShop 505  
Adobe Type Manager 59  
Aldus PageMaker 4 499  
Claris CAD 559  
Disk Doubler 45  
DynePerspective 499  
FileMaker Pro 212  
Freedom of the Press 259  
Freehand 315  
Leonard SmartWorks 189  
MacProject II 345  
MacRendernMan 596  
Macromind Director 437  
MicroSoft Complete Line call  
MiniCad + 489

### Dayna Dual Drive 1.2Mb/1.44Mb

Dayna Single Drive 1.44Mb 789  
Fujitsu 800K Floppy 130  
Inwin Magnetics 80mb Tape 619  
Kenneth Drive 2.4 319  
Kenneth Tech Report 191  
MassMicro DataPak II Removable 1099  
Micronet 1.3GB Tape Backup 2799  
Pinnacle Micro RE0650 Interface 3799  
PLI Infinity Turbo 45R 769  
PLI Turbo Floppy 275  
Ridome R45 Plus Removable 719  
Tectmar LaserVault 650 RWO Interface 4129

### Accessories, Disks, Ribbons

150 Meg Backup Tape 35  
60 Meg Backup Tape 22  
American Power 110SE UPS 215  
American Power 370ci UPS 339  
HP DeskJet Cartridges 17  
ImageWriter Color Ribbons 3  
ImageWriter Multi Color Ribbon 11  
Jet Fill Desk Jet Re-Fill 10  
Kensington Complete Line call  
MacDisk DS/DD Bulk 50 call  
PC Guardian Mac Anti Theft Pack 34  
Sony DS/DD Box 10 call  
Sony DS/DD Bulk 50 call  
Sony DS/HD Box 10 16  
Sony DS/HD Bulk 55  
Sopris SE Carrying Bag 41  
TI MicroLaser Toner Kit 55

### Software

Adobe Fonts call  
Adobe PhotoShop 505  
Adobe Type Manager 59  
Aldus PageMaker 4 499  
Claris CAD 559  
Disk Doubler 45  
DynePerspective 499  
FileMaker Pro 212  
Freedom of the Press 259  
Freehand 315  
Leonard SmartWorks 189  
MacProject II 345  
MacRendernMan 596  
Macromind Director 437  
MicroSoft Complete Line call  
MiniCad + 489

### Norton Utilities

Persuasion 315  
Pixal Paint Pro 389  
Quark Express 3.0 517  
Retrospect Remote 269  
SoftPC EGAWAT Bundle 355  
StrataFlight 119  
StrataVision 3D 309  
Stuffit Deluxe 57  
Survival 3D Pro 485  
Timbuktu 95  
TypeStyle 114  
Virtual 125

### HOW TO ORDER

Order Call: 1-800-622-3475 or (512) 343-9441

Cost. Service: 1-512-343-9441 ext 631

Tech. Support: 1-512-343-9441 ext 628

24 hr Fax Line: 1-512-343-6141

Int'l. Orders: Call or fax for price and shipping

throughout the free world. Leasing: Very Flexible

terms & quick approval make it easy to lease. Please

call for orders over \$3000. Tax: No tax charged

outside of Texas. Texas Residents add 8% Payment:

Visa, MasterCard, Discover. Your credit card is not

charged until your order is shipped! Pre-pay

company and personal checks, cashiers checks.

Wire transfers, approved company and institutional

PO's. (Net 15). \$5 charge for COD, cashiers, checks.

Shipping: We ship Federal Express. Other major

carriers available \$10 minimum shipping charge.

Returns: All returns require RMA# from customer

service. Please call (512) 343-9441, Ext 631. All

returns subject to a restocking fee. Shipping and

handling not refundable. Opened software is not

returnable. All Magic products (except memory)

carry a 30 day money back guarantee (call for

details). Terms: Item availability and price subject to

change without notice. Some products subject to

back order.

Address: MacProducts USA

8303 Mopac, Suite 218

Austin, Texas 78759-6369

# MacProducts USA 1-800-MAC-DISK

UK 080 089 1742 • Singapore 65 287 5181 • Australia 0014 800 125353 • Thailand 622 234 7531 • Canada 800-624-9307 • USA 1-800-622-3475

Circle 175 on reader service card



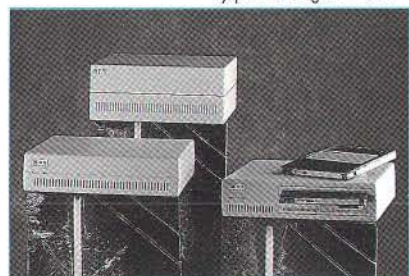
# Aim with MacTel for your Apple solutions!

## Index Hard Drives

**Economy series:** All INDEX Economy drives include MacTel HD Utilities and 14 Mb PD.

		internal	external
Quantum 3.5"	52 Mb 12 ms	\$279	\$359 Slimline
ProDrive HD	80 Mb 12 ms	\$479	\$559
	105 Mb 12 ms	\$379	\$459
	105 Mb 12 ms	\$479	\$559 Slimline
	170 Mb 12 ms	\$699	\$779
Imprimis 5.25"	210 Mb 12 ms	\$769	\$849
Wren Half-Height drives	425 Mb 12 ms	\$1499	\$1579
Imprimis 5.25"	320 Mb 16 ms	\$1119*	\$1299*
Wren Series HD	330 Mb 10,7ms	\$1449*	\$1549* RUNNER
	640 Mb 16 ms	\$1749*	\$1849*
	650 Mb 10,7ms	\$2900*	\$3000* RUNNER II
	1,2 Gb 16 ms	\$2699*	\$2799*

⇒ Index 1.2 Gb DAT Tape Back Up System w/ Retrospect \*\*\*\$1699  
Squest cartridges \*\*\*\*\$69



**Elite series:** All INDEX Elite external Hard-Drives have an auto-Sensitive Power Supply and include MacTel HD Utilities, Backmatic V-2, AutoSave II and 14 Mb PD software.

		internal	external
Quantum 3.5"	80 Mb 12 ms	\$549	\$639
ProDrive HD	105 Mb 12 ms	\$499	\$589
	170 Mb 12 ms	\$799	\$889
	210 Mb 12 ms	\$869	\$949
Imprimis 5.25"	320 Mb 16 ms	\$1399*	\$1449
Wren Series HD	330 Mb 10,7ms	\$1599*	\$1699 RUNNER
	640 Mb 16 ms	\$1999*	\$2099
	1,2 Gb 16 ms	\$3199*	\$3299

All INTERNAL DRIVES include Bracket cables and software, everything to plug-N-go.

\*Fits only MacII, MacIIx & MacIIx. All INDEX external Harddrives are supplied with universal power supplies, for world-wide adaptability. Backmatic V-2 and AutoSave II are registered trademarks. All INDEX "ELITE" harddrives are bundled with Backmatic V-2 & AutoSave II software.

## VisionPro Monitor Systems

When purchasing Systems, compare the options and features. VisionPro Color Graphic cards are manufactured under license for MacTel Technology and support Macintosh graphical needs now and in the future.

### Video Graphic Systems

#### 8-Bit Business System

8 Bit Video Card non Upgradable, 20" Trinitron (CT-20)

-75 Hz.....\$2795

#### 8-Bit SystemPro 20"

VisionPro\* VideoCard, 20" Trinitron (CT-20)

-75 Hz.....\$3249

#### 24-Bit VisionPro Interface Upgrade Kit

w/ purchase of any systemPro .....\$600

\*All VisionPRO Interface cards have multi-monitor support (Sony 19" & Ikegami 20"), support BlockMode transfer & acceleration, Upgradable 8-Bit to 24-Bit cards, Pan/Zoom 2X & 4X and virtual desktop. Business system video card offers Pan/Zoom 2X & 4X and virtual desktop.

### Monitors

Apple 13" RGB.....\$749

Seiko 14" Trinitron CM 1445

Hi-Res Monitor w/Tilt & Swivel .....\$589

Hitachi 14" MVX Super

Hi-Res Monitor w/Tilt & Swivel .....\$575



### Video Interface/cards

8-Bit Vision ST 813

for 13" or 14" Monitor.....\$275

24-Bit Vision ST 2413

for 13" or 14" Monitor.....\$375

Vision ST Upgrade Kit (8 - 24 Bit) .....\$135

VisionPro 8 - 24 Bit Upgrade Kit.....\$700

## SPECIAL PROMOTION!

Quantum 3.5" ProDrive HD 52, 105 & 210 Mb

	internal	external
52 Mb	\$279	\$359
105 Mb	\$379	\$459
210 Mb	\$769	\$849

## Macintosh CPU's and Systems

- Mac Classic (fully loaded) • Mac SE/30 • Mac II LC
- Mac II SI • Mac II CI • Mac II FX
- LaserWriter II NT, NTX and Personal LaserWriter's

- Also fax/call for quote on complete Apple Macintosh product line and competitive pricing • Government • Universities • Corporations (on approval) - bids requested •

## Index Memory Modules

Our SIMMs are manufactured in-house at our state-of-the-art facilities!

• 1 Mb Surface Mounted / Low Profile, 70/80 ns. lifetime warranty .....	\$44 <sup>50</sup>
• 1 Mb FX and laserwriter II. SIMM, 70/80 ns.....	\$45 <sup>50</sup>
• 3 Mb Classic Upgrade / ...	\$149
• 4 Mb SIMM's (all Mac's) Surface Mounted / -80 ns - bundled with Maxima (min. 4 units for Maxima software).....	\$209
• 1 Mb X 9 SIMM 70/80 ns.....	\$48 <sup>50</sup>

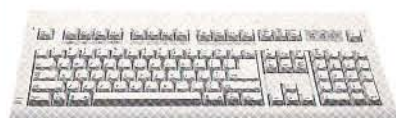
ALL INDEX SIMMS HAVE GOLD CONTACTS AND TRACES  
• LIFETIME WARRANTY • CALL FOR CURRENT PRICING •

**NEW:** 1 Mb TI Microlaser PS 17&35 memory upgrade (increase printing speed and download more fonts) \$89

## MacTel Extended Keyboards

make MacTel your keyboards connection!

MacTel Extended Keyboards : English...\$99  
(delivered with French or German system software) German...\$119 French



## Texas Instruments

MicroLaser PS-17 w/ 17 fonts.....	\$1399
MicroLaser PS-35 w/ 35 fonts.....	\$1699
1Mb TI Microlaser PS card XL 17 & 35 memory upgrade	\$89
MicroLaser XL.....	\$139

(increase printing speed and download more fonts)

## Ordering informations

**VISA** No surcharge for Visa or MasterCard. Your credit card will not be charged until your order is ready to ship. International orders call or fax for details. European banking service available. • Purchase orders accepted from university, government, military, NET 30 and corporate (on approval). • Please allow 10 days for personal and company checks to clear. • Returned merchandises must be authorized to expedite process, call 512/451-2600 for RMA number. • All defects will be replaced or repaired at MacTel's discretion.

Shipping and handling charges not refundable. • Product must be in original shipping container including all packing materials. • All products are subject to a 3% restocking fee. • Prices subject to change without notice and all products subject to availability. •

MacTel carries hundreds of professional Mac peripherals (not listed) and the entire Macintosh line.  
• Call or Fax for a complete catalog.

**1.800.950.8411**



**mactel**

TECHNOLOGY CORPORATION

Professional Solutions For Today's Macintosh Professional.

- Switzerland : 042/36 44 33
- Europe : 0041/46-054020
- France : 0033/88-77-83-20

3007 North Lamar • Austin, Texas 78705 © 512/451-2600 • Fax : 512/451-3323 • Technical Support : 512/458-2222 •



# Lowest Prices Ever Memory and Drives

30 day Money Back Guarantee

**1-800-426-1591**

Monday through Friday: 9:00a.m. to 7:00p.m. EST



**Quantum 40MB Drives from \$228**

**Quantum 100MB Drives from \$345**

**Classic Memory Upgrades: 1MB - \$61, 3MB - \$129**

## Quantum Hard Drive Values

Capacity	Raw	Internal	External	Access
40MB	<u>\$228</u>	\$252	\$338	12ms*
100MB	<u>\$345</u>	\$370	\$456	12ms*
120MB	\$475	\$567	\$653	12ms*
170MB	\$633	\$651	\$737	12ms*
200MB	\$610	\$719	\$804	12ms*
50MBLP	\$253	\$281	n/a	12ms*
100MBLP	\$411	\$461	n/a	12ms*

2 year warranty on Quantum drives. 5 year warranty upgrade for \$50 at time of purchase only.

### Super Value (Refurbished External Drives)

20MB	\$213
40MB	\$257
80MB	\$347
100MB	\$365
150MB	\$586

### Used Int. Ext.

20MB	\$89	\$119
40MB	\$141	\$185
80MB	\$251	\$302
100MB	\$261	\$312

Quantities are limited on refurbished (90 day warranty) and used (30 day warranty) drives.

### Seagate Wren Drives (Internal) (External)

400MB Hard Drive	\$1109	\$1243
650MB Hard Drive	\$1549	
1GB Hard Drive	\$2199	

## Memory

Classic/SE/Plus	\$ 42
1 X 8 SIMMs 80ns	\$ 48
1 X 8 FX SIMMs	\$ 50
4 X 8 SIMMs	\$ 196
4 X 8 FX SIMMs	\$ 196
1MB Classic Upgrade	\$ 61
3MB Classic Upgrade	\$ 129
Classic Upgrade Kits	
40/1MB Upgrade	\$ 353
40/3MB Upgrade	\$ 416
Fully compatible 1" drives	

5 year warranty on memory.

External Full-Height Kits	\$ 125
External Half-Height Kits	\$ 99
Internal Drive Kits	\$ 25
External Terminators	\$ 10
50/50 SCSI Cables	\$ 8
SyQuest Cartridges	\$ 67
New Fans	\$ 10
New Power Supplies	\$ 50

## Toshiba CD-ROM Drive \$549

Includes: all connecting hardware, 1 year warranty, and a sample CD.

**Trade in an old drive toward a purchase of a new Quantum Hard Drive**

VISA and MasterCard accepted— no surcharge. \$50 minimum on all orders.

All drives come with a 30 day Money Back Guarantee. Prices and specifications subject to change without notice. Product subject to availability.

**1-800-426-1591**

Serving the industry since 1987 Circle 18 on reader service card

AURORA INDUSTRIES, INC. • 60 Skiff Street, Suite 1011, Hamden, CT 06517-1017 • 203-624-9018 • FAX-203-562-8191



# HARD WORKING

# HARD CORE

# HARD DRIVES

## POWERDrive

U.S. & Canada

## 800-776-DISK

Hard Drives International • 1912 W. Fourth St. • Tempe, AZ 85281  
Sales: (602) 967-5128 • FAX: (602) 829-9193 • Int'l.: (602) 350-1144

Prices and products subject to change. All items are new. P.O. located in Tempe, Arizona. Delivery is 1-3 business days. VISA/MC/AMEX. 30-day warranty. Shipping & handling charges not refundable. Products must be in original condition. \$13 Military APC/PO Express delivery. (602) 350-1144. Hard Drives International is a division of Insight Distribution Network, Inc. All trademarks and trade names are the property of their respective owners. POWERDrive is a trademark of Insight Distribution Network, Inc. © 1991 Insight Distribution Network, Inc.

**HARD DRIVES**  
International

### They're all HARD WORKING

- ▲ Super fast 14ms - 28ms access time.
- ▲ No less than 30,000 hours MTBF.
- ▲ Compatible with MacII, IIcx, IIci, SE, SE/30, Plus & fx.
- ▲ Your choice of brand name hard drives.



### And HARD CORE

- ▲ Whisper-quiet fan.
- ▲ 24 hour burn-in testing.
- ▲ 50-pin connectors to daisy-chain.
- ▲ Power surge protection.
- ▲ Steel case for low heat & support.

### You might say our drives are HARD TO BEAT

- ▲ Designed & engineered by experts at Hard Drives International.
- ▲ Hundreds of thousands of customers.
- ▲ Lifetime Toll-free technical support.
- ▲ Step-by-step Manual.
- ▲ 30-day "Worry-Free" Guarantee.
- ▲ 1 & 2 Year Replacement Policies.

### At prices that are HARD TO BELIEVE

- ▲ We buy quality components in huge volume & pass the savings to you!

### It's easy to see why POWERDrives are HARD TO RESIST



## POWERDrive

Mbytes	Mechanism	Access	Int.	Ext.
20	Seagate	28ms	\$249	\$295
30	Seagate	28	269	319
40	Quantum*	19	259	319
45	Seagate	28	299	359
60	Seagate	28	NA	389
80	Seagate	28	NA	439
80	Quantum*	19	379	439
105	Quantum*	19	349	399
105	Toshiba	20	479	549
200	Maxtor	15	929	799
210	Quantum*	16	769	799
320(HH)	Micropolis	14	NA	1399
320(FH)	Imprimis	16	NA	1449
600(FH)	Imprimis	16	NA	1799
660(FH)	Micropolis	16	NA	1899
1050(FH)	Imprimis	16	NA	2699
1050(FH)	Micropolis	14	NA	2699

**Removable SyQuest** \$499  
25ms. Includes 45Mb cartridge. Extra Cartridge \$79.

**CD-ROM** \$599  
External optical storage unit. 350ms access time. Uses Toshiba or Chinon mechanism - your choice.

**Memory Upgrades**  
1Mb\* (1x8-80ns) \$46  
4Mb\* (4x8-80ns) \$249

\* For MacII, IIcx, IIci, SE, SE/30, Plus, Classic & Ixi.  
**150Mb Teac Tape Backup (w/tape)** \$599  
Ext. Incl. "Express Tape" software. Extra Tape \$49.

\* 2 Year Replacement Policy

KA0591



## FOR-A-MAC

### MAC IIsi System

Mac IIsi, 5 megabytes of RAM, 105mb Quantum Hard Drive, 1.44mb Apple SuperDrive, Mouse, Apple Standard Keyboard, NEC MacSync 14" High Resolution Color Monitor.

Only...\$3665

### MAC IIsi System

Mac IIsi, 5 megabytes of RAM, 105mb Quantum Hard Drive, 1.44mb Apple SuperDrive, Mouse, MacPro Extended Keyboard, NEC MacSync 14" High Resolution Color Monitor.

Only...\$5119

### MAC IIfx System

Mac IIfx, 4 megabytes of RAM, 105mb Quantum Hard Drive, 1.44mb Apple SuperDrive, Mouse, MacPro Extended Keyboard, RasterOps ColorBoard 264, NEC MacSync 14" High Resolution Color Monitor.

Only...\$7589

## FOR-YOUR-MAC

### CPU's

Mac IIc 2/40 .....\$1849  
Mac Classic 2/40 .....\$1279  
Classic 16mhz Accelerator.....\$199  
Classic 1.5mb Upgrade .....\$109  
Classic 3mb Upgrade .....\$199  
128K CI Cache Card .....\$259

### Monitors

NEC MacSync 14" .....\$420  
Seiko Trinitron 14" .....\$579  
Ikegami Trinitron 20" .....\$1859  
RasterOps ClearVue II .....\$1249  
RasterOps ClearVue/GS .....\$1499  
RasterOps 19" 8L System ....\$4159  
RasterOps 19" 24L System ..\$5449

### Video Cards

RasterOps 24s .....\$530  
RasterOps 24si .....\$739  
RasterOps 264/SE30 .....\$599  
RasterOps Accelerator .....\$335

### Printers

QMS PS410 .....\$2039  
TI MicroLaser/PS35 .....\$1595  
NEC SilentWriter II .....\$1599

## FOR-YOUR-MAC

### Miscellaneous Peripherals

MicroTek 300zs Scanner .....\$1704  
(with Adobe Photoshop)  
Zoom v.42bis Modem .....\$195  
Zoom 2400 Modem .....\$89  
Abaton InterFax 24/96 .....\$339  
NEC CDR-36 w/ interface ....\$469  
Farallon Mac Recorder .....\$159  
Mac 101 Keyboard .....\$139  
DataDesk Switchboard .....\$158  
AE QuadraLink .....\$199  
SI NuBus Expansion Chassis ..\$1099  
MicroNet 45mb Removable ..\$699  
Syquest Cartridges .....\$81  
PhoneNet 10 pack .....\$165  
PhoneNet Connector .....\$25  
1mb SIMMs .....\$49 each  
(free installation manual and tool)  
SIMM installation video .....\$29  
Seikosha AP-1000 Printer .....\$219  
Ikegami 20" 24bit Bundle ....\$3499

### Wacom Graphics Tablet

6 x 9 (tablets include stylus) ..\$508  
12 x 12 .....\$719  
15 x 15 .....\$1095  
12 x 17 .....\$1095

**Call For The Best Price on Your Own Custom Mac System**

# Macintosh Systems

and everything For-A-Mac

## MacSource™

Do It For Your Mac  
and For Yourself!

4000 Medical Parkway • Suite 105  
Austin, Texas 78756  
(512) 467-9652 • (800) 367-2622  
FAX (512) 219-1916  
International Orders Welcomed!

**1.800.367.2622**

**1.800.FOR.A.MAC**

**Terms:** Visa & MasterCard accepted with no surcharge. Please deduct 1% for prepayment by cashier's check. Restocking fee on product purchased in error.

Circle 48 on reader service card.

**PINPOINT  
YOUR  
PROSPECTS.**

*Advertisers*

*interested in*

*renting*

*MACWORLD's*

*Subscriber List,*

*Please call*

*Kevin Normandeau*

*IDG List Services*

*1.800.343.6474*

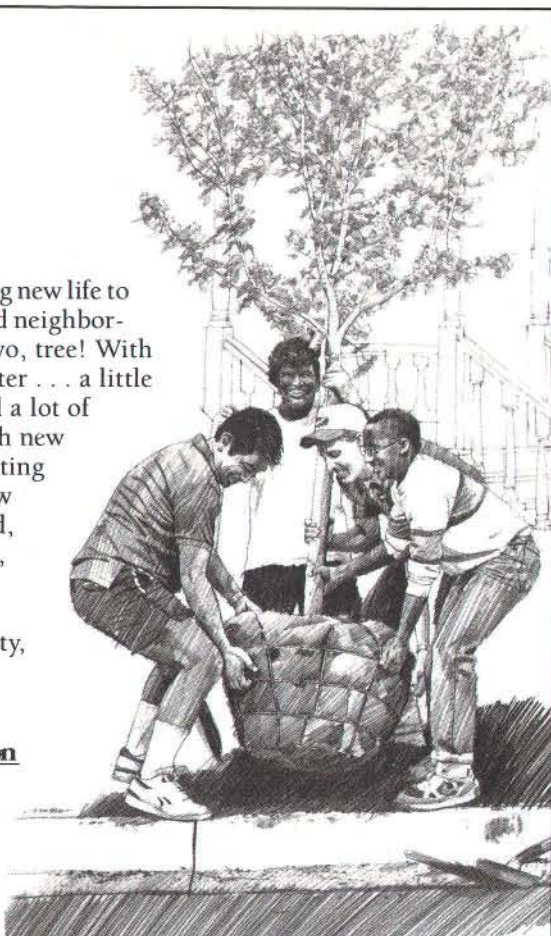
*for MA 508.879.0700*



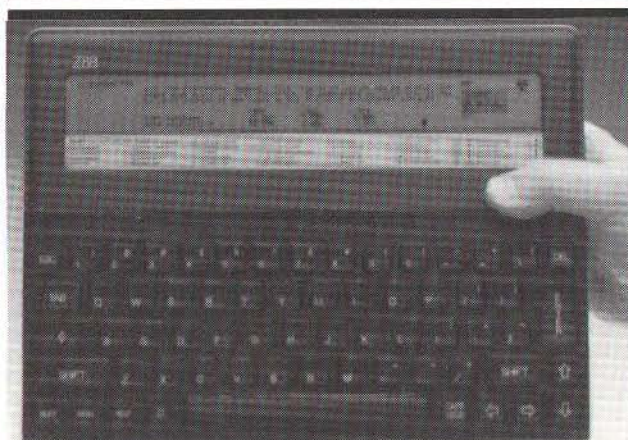
# Turn A New Leaf

Bringing new life to the old neighborhood is as easy as one, two, tree! With the help of our city forester . . . a little muscle and sweat . . . and a lot of fun, we're bringing a fresh new look to our street by planting trees. You can turn a new leaf in your neighborhood, too. For your free booklet, write: Tree City USA, The National Arbor Day Foundation, Nebraska City, NE 68410.

 **The National  
Arbor Day Foundation**



## MAC PORTABILITY



**CAMBRIDGE**  
Z88 Computer **From \$349**

Includes: File Transfer  
software, cable, and  
4 AA batteries.

CALL TODAY!

**800-535-3252**

**Nothing  
else to  
buy!**

**AUTHORIZED RESELLER**  
1801 W. Larchmont Avenue  
Chicago, Illinois 60613 USA  
312-549-0030 • FAX 312-549-6447



**Try It For 21 Days At NO Risk!**

Circle 19 on reader service card.

 **Nashua**

## FAX PAPER

*Premium Quality  
Super Low Price*

*Before You Buy More Low Quality  
Junk Fax Paper, Check Our Price  
For A Quality Brand Fax Paper..*

*"Besides we don't FAX you to death quoting prices"*  
**DISKETTE CONNECTION**

## PRECISION

**FLEXIBLE DISKS**

( MINIMUM ORDER 10 BOXES )

5.25" DOUBLE SIDE **2.90** /bx

5.25" HIGH DENSITY **5.30** /bx

( MINIMUM ORDER 5 BOXES )

3.5" DOUBLE SIDE **4.95** /bx

3.5" HIGH DENSITY **9.95** /bx

**DISKETTE CONNECTION**

**SONY**

*Bulk  
Diskettes*  
3.5" DS  
( 1 MB )  
3.5" HD  
( 2 MB ) **.49** ea  
**.99** ea

**DISKETTE CONNECTION**

## DISKETTE CONNECTION

**NORTHEAST & CANADA**

**1 ( 800 ) 451-1849**

PO BOX 10247, WILMINGTON, DE. 19850

**SOUTHEAST**

**1 ( 800 ) 940-4600**

PO BOX 4163, DEERFIELD BEACH, FL. 33442

**MIDWEST**

**1 ( 800 ) 654-4058**

PO BOX 1674, BETHANY, OK. 73008

**WEST - HAWAII & ALASKA**

**1 ( 800 ) 621-6221**

PO BOX 12398, LAS VEGAS, NV. 89112

Minimum Order \$20.00 NO SURCHARGE on VISA / MC  
COD orders add \$3.50 Shipping charges determined by  
items and delivery method required by customer.  
( Prices are subject to change without notice )

**FAX ( 405 ) 495-4598**

Circle 79 on reader service card.



# With A Top Ten List Like This, Who Needs David Letterman?

- |                                                                                                                                                                        |                                                                                                                                                                                       |                                                                                                                                                                                  |                                                                                                                                                            |                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1. 1 MB SIMMs</b><br>12hrs Lifetime Warranty<br><b>\$35</b><br>                    | <b>2. MicroTek 300ZS</b><br>24-Bit Color Scanner<br>New! with <b>Photoshop!</b><br><b>\$1649</b><br> | <b>3. PLI Infinity 45MB</b><br>Removable HD<br>MacUser's Eddy Award Winner!<br><b>\$639</b><br> | <b>4. HP DeskWriter</b><br>300 DPI inkjet printer<br><b>\$669</b><br>    | <b>5. Macintosh IIfx</b><br>4 MB RAM/ 80MB hard drive<br><b>\$6375</b><br> |
| <b>6. TI microLaser PS35</b><br>300 DPI Postscript laser printer<br><b>\$1595</b><br> | <b>7. Quark XPress 3.0</b><br>The premier DTP software<br><b>\$449</b><br>                           | <b>8. Syquest Cartridge</b><br>5040 44MB cartridge<br><b>\$65</b><br>                           | <b>9. Seiko CM 1445</b><br>14" RGB Trinitron monitor<br><b>\$545</b><br> | <b>10. Macintosh LC</b><br>Low priced color Macintosh<br><b>\$1715</b><br> |

## SYSTEMS

### SYSTEM LEASING NOW AVAILABLE

Mac Classic	825
Mac LC	1715
Mac IIsi	2640
Mac SE/30	2645
Mac Ili	3950
Mac IIfx	6375
NEW Macintosh Portable	Call
Macintosh Portable	2999

## HARDWARE

RasterOps 364	829
RasterOps 24 STV	1152
RasterOps 24si	699
RasterOps 24S	499
RasterOps all products available	Call
<b>SIMMs: all types/best prices</b>	<b>Call</b>
Apple 13" HighRes RGB	639
Apple ImageWriter II	415
Apple LaserWriter II NTX	4199
<b>Apple Personal LaserWriters</b>	<b>Call</b>
Abaton 300ZColor/GS Scanner	1599
Abaton Interfax 24/96	275
Asante EtherNet Product Line	Call
Caere Typist	425
CD ROM Libraries	Call
Courier 9600 V-32 MNP-5	695
Datadesk Mac 101 Keyboard	123
Datadesk Switchboard	149
Daystar Digital all products	Call
Dove Fax 24/96	263
Dove MacSnap all Models	Call
E-Machines T16	1995
E-Machines T19	4100
GCC PLP II Laser Printer	839
GCC PLP IIS Laser Printer	1236

GCC BLP II Laser Printer	1649
GCC BLP IIS Laser Printer	2399
GCC Products	Call
Hayes Smart Modem 2400	325
<b>Hewlett Packard Lasers</b>	<b>Call</b>
Hewlett Packard DeskWriter	669
Keytronic MacPro Plus Keyboard	110
Logitech ScanMan 32	299
Mac 386	1510
Mac Recorder Digitizer Only	89
Macintosh LC VRAM Upgrade	Call
Magnavox 14" Color	469
Marathon 030/030x	459
Mass Micro Quick Image 24	649
<b>Microtek 300ZS</b>	<b>1649</b>
Microtek 400GS	2499
Motorola PMMU 68851	109
NEC Monitors-all models	Call
NEC CD-ROM CDR 35	Call
NEC CD-ROM CDR 72	Call
NEC MacSync HC	420
NEC Silentwriter II Model 90	1610
Novi Quick 30 Accelerator	799
PhoneNet Star Controller	739
PhoneNet 10 Pack	188
Practical Peripherals 2400b	164
Practical Peripherals MacPak	225
<b>QMS PS-410</b>	<b>1959</b>
QuickMail 10 User	285
QuickView Z21 SE	1589
QuickView Z21 II	1659
QuickView Z21 IQ	2310
Radius Pivot Monitor	686
RasterOps ClearVue/GS	1475
<b>Seiko CM-1445</b>	<b>545</b>
Seiko Smart Label Printer	176
Sharp Scanners All Models	Call

Shiva Net Modem v.32	1230
Silverview S4/S8	1660/1995
<b>TI microLaser PS17</b>	<b>1499</b>
TI microLaser PS XL 17	2449
TI microLaser PS XL 35	2799
Timbuktu/Remote Access Pk	732
Toshiba CD-ROM XM 3201A	685
Turbo Mouse 3.0	101
TurboStar	1149
ZOOM 2400 Baud Modem/Fax	99

## DRIVES & TAPES

Bernoulli: all Models	Call
CMS: all Models	Call

## JetFill

The clean, inexpensive solution for recharging HP DeskWriter cartridges. Permanent ink. Colors available.

**\$10.95**



Cutting Edge: all Models	Call
DaynaFile 360k	424
DaynaFile 360k/1.2Mb	589
Irwin 40Mb/80Mb Tape	799/969
MicroTech 50Mb Removable	Call
PLI Infinity 40 Removable	639
PLI Turbo Floppy 1.4	273
Quantum ProDrive 40Mb	250
Quantum ProDrive 80Mb	389
Quantum ProDrive 105Mb	405
Quantum ProDrive 170Mb	689
Internal/External Drive Kit	29/99

Syquest 44Mb Mechanism	399
Syquest 44Mb Cartridge	65

## SOFTWARE

4th Dimension	452
Accountant Inc.	306
Acus File Force	222
<b>Adobe Illustrator 3.0</b>	<b>330</b>
Adobe Fonts	from 56
Adobe PhotoShop	485
Adobe Type Manager	51
Adobe Type Reunion	34
At Once!	273
Can Opener	57
Canvas 2.1	172
Carbon Copy 2 Pack	153
Cricket Presents	280
Double Helix 3.0	325
Dreams	282
Farralon MediaTracks	171
Fastback 2.1	97
FileMaker Pro	181
Fontographer 3.2	181
Fontbase + Mac	Call
FrameMaker	265
Freedom of the Press 3.0	642
Freehand 2.0	229
Freehand 3.0	297
FullWrite Professional	Call
Letraset Color Studio 1.0	639
Letraset Design Studio	273
MacDraw II	640
<b>Macintax '90</b>	<b>541</b>
MacProject II	241
Macromind Director 2.0	52
MacWrite II	345
Managing Your Money	540
	125
	113

MasterTracks Pro	183
MathCAD 1.0	264
Mathematica SE	429
MS Word 4.0/Excel 2.2	225/225
<b>MS Excel 3.0</b>	<b>Call</b>
MiniCAD+	439
ModelShop	340
Norton Utilities Macintosh	74
OmniPage	496
On Location	70
PageMaker 4.0	485
Passport Encore	335
Passport Midi Interface	63
PixelPaint Professional	356
Quark XPress 3.0	449
Quick Keys II	87
Ready Set Go	252
Retrospect	131
Simply Accounting	215
Soft PC	219
Stratavision 3D	279
StrataFlight	109
<b>Stuffit Deluxe 2.0</b>	<b>48</b>
SUM II	87
SuperCard 1.5	180
Think C 4.0	153
Think Pascal 3.0	159
TOPS 3.0 Network Bundle	172
<b>Turbo Tax</b>	<b>43</b>
Ultra Paint	115
<b>Vellum</b>	<b>410</b>
Virex	46
Virtual 030	114
White Knight	75
WingZ	235
Write Now 2.0	111

# I WANT IT NOW!

**HOW TO ORDER:** Payment: Visa, Mastercard, Discover (no surcharge), checks, and COD's. \$6,000 maximum on COD's. **Tax:** Texas residents only-add 8% sales tax. **Prices** and items subject to change and availability. **International:** 5% surcharge on international orders. **Mail In:** Orders accepted with a \$10 surcharge. **Terms:** You are not charged until your order is shipped. Phone charges cannot be refunded. **Shipping:** minimum \$5-UPS Ground, Blue, Red, Federal Express, Emery, Airborne. \*Returns must be in original condition and package. Seal must not be opened on software. Returns may be subject to a restocking fee. Ask for details when ordering. Bottom Line Distribution cannot be responsible for errors in typography or photography.

Same day delivery available in select U.S. cities. Delivery charges vary with warehouse vicinity. Offer does not apply to some hardware and software items. Call Bottom Line for details.



# BOTTOM LINE

DISTRIBUTION

**Fax: 1-900-420-8770**  
**International Fax: 512-476-6399**  
 2204 Rio Grande, Austin, Texas 78705

\$10 PER FAX

# 1-900-420-3636

\$2 PER MIN



## PRINTERS



**The Nation's Largest & Fastest Growing TI microLaser Dealer!!!!**

**TI microLaser PS35 \$1675**

MacUser #1 Personal Printer (4.5 Mice)

**TI microLaser XL Call!**

16 Pages per Minute & SCSI Port!

**TI microLaser PS17 \$1375**

We stock all accessories & supplies.

**Epson EPL-7500 (RISC Fast!) Call!**

**NEC Silentwriter II/90 & II/290 Call!**

**QMS PS410 \$2050**

Color

**CalComp Colormaster Plus Call!**

**Kodak Diconix Color 4 Call!**

## MONITORS

**E-Machines T16 \$1395**

**E-Machines TX16 \$2095**

Prices Reflect Trade In. Call for Details.

**MegaGraphics Rival 19" \$1095**

**NEC MacSync \$455**

**RasterOps 24S \$505**

**Seiko 14" w/RasterOps 24S \$995**

**Sigma L-View Multimode \$1395**

**SuperMac Systems Call!**

## INPUT & OUTPUT

**Æ QuadraLink \$199**

**DayStar Digital LT200MC Call!**

**DayStar Digital LT200PC Call!**

**EMAC Silhouette Call!**

**Kensington Turbo Mouse \$105**

**VoiceLink Call!**

**Voice Navigator II Call!**

**Wacom Tablets Call!**

**Optical Cartridges \$155**

## 44 MEG REMOVABLE DRIVES

**Eagle Syquest Drive \$499**

**FWB HammerDisk44 Call!**

**Mass Micro DataPak Call!**

**PLI Infinity 40 Turbo Call!**

## SCANNERS

**Abaton Scan 300/Color \$1395**

**Caere TYPIS \$465**

**Epson ES-300C Call!**

**Howtek Call!**

**Microtek 300ZS Call!**

**UMax UG80 (256 Grey Scale) \$995**

**OmniPage \$479**

## TI microLaser Memory

**\$95**

## SYQUEST

**\$68**

Per

45 Meg Removable Cartridge

## MACINTOSH SYSTEMS

We buy and sell  
Macintosh Systems:  
new and used;  
working and  
non-working

## ACCELERATORS

Mac II, IIx, IIcx, IIci

**DayStar Fast Cache IIci \$269**

**DayStar 40 MHz PowerCache IIci \$895**



**\$250 Trade-In**

**on Fast Cache IIci Cards!!**



**DayStar 25 MHz PowerCard \$995**

**DayStar 33, 40 & 50 MHz PowerCard Call!**

**DayStar SCSI PowerCard (0 Meg) \$995**

**I²R 32K IIci Cache Card \$199**

**Sigma DoubleUp Data Compression Card \$179**

Mac SE, Plus

**I²R SE/FX 40 MHz 68030 \$1995**

(with 68882, 32K Cache, 4 SIMM Sockets!!)

**NewLife SE 16 MHz 68030 (w/4 SIMM Sockets) \$395**

**NewLife SE 25 MHz 68030 (w/4 SIMM Sockets) \$895**

**NewLife SE 33 MHz 68030 (w/4 SIMM Sockets) Call!!**

## FAX MODEMS

**Challenger VP24/96 (9600 send fax) \$99**

**Abaton 24/96 InterFax \$295**

**Æ DataLink LC \$245**

**DoveFax \$275**

**Global Village TelePort \$175**

**Orchid Fax Modem \$425**

**Prometheus 9600M Plus \$599**

**Prometheus 14.4/9600 Ultima Call!**

## DATA MODEMS

**Challenger VP2400 \$69**

**Zoom VP2400 V.42 bis (MacUser #1) \$175**

**Hayes V-Series Ultra 9600 \$795**

**Practical Peripherals 9600SA \$499**

**US Robotics 14.4/9600 V.32 \$695**

## HARD DRIVES

### HARD AND FAST RULE:

**BIG, FAST, HARD DRIVES  
COST LESS AT MACCENTER**

**Wren (5.25, Full Height)**

**330 (385NM-Runner) Int/Ext \$1425/\$1495**

**600 (702NM) Int/Ext \$1595/\$1695**

**630 (766NM) Int/Ext \$1725/\$1845**

**660 (767NM-Runner) Int/Ext \$2095/\$2195**

**1 Gig (1200NM) Int/Ext \$2495/\$2595**

Internal 5.25FH Wren drives fit only Mac II, IIx and IIfx

**Wren (3.5)**

**311 (400NM) Int/Ext \$1495/\$1595**

**426 (480NM) Int/Ext \$1695/\$1795**

Internal 3.25 Wren drives fit all Macs, except LC, SE and Classic

**MACCENTER™**

The Center Of The Macintosh Universe™

**800-950-3726**

Fax 512-476-3726 International Orders 512-476-7466

Circle 189 on reader service card

8:30 am - 7:00 pm CST M-F  
10:00 am - 4:00 pm CST Sat.  
Sunday: Call, you may get lucky.  
812 San Antonio Street, Suite 402  
Austin, Texas 78701-2224 (where else?)  
Prices valid 3/29/91 - 4/28/91.

MasterCard & Visa accepted.  
NO surcharge for MasterCard/Visa.  
Corporate, Government & University  
P.O.'s accepted with approved credit.  
All returns require approval and  
are subject to a restocking fee.



# 80<sup>mb</sup> Maxtor



Bought one of the new Macs but need a bigger drive? When you buy a new drive from us, we'll pick up your 3 1/2 inch half-height or low profile SCSI Mac drive and turn it to you in 4 business days in our portable case for just **\$169.95**

Winner, September 1990 MacWorld "Service Hero" award.

## Why APS?

### Five Simple Reasons:

**1. Quality:** While our products may not be fancy, our cases are all meticulously manufactured to our specifications, none of those light-weight imported knock-offs. They utilize the best auto-switching digital power supplies and quiet, high capacity fans. Our connectors are all name brands of the finest quality. Our drive mechanisms speak for themselves. Quantum, WREN, Maxtor, Conner, Syquest, Teac.... Industry standards... the best available.

**2. Knowledge:** Our helpful, knowledgeable sales associates will help you determine what is the best drive for your needs (not just the most expensive). They'll help you navigate those thorny termination issues, and help you decide the right drive for your particular hardware configuration.

**3. Support:** Our trained technical associates will help you address any questions you might have about an APS drive. Are you running into conflicts when you use certain combinations of hardware and software? Our technical associates can help you sort through the kinds of problems that plague both the novice and the power user.

**4. Service:** Absolutely the best in the industry! If we tell you we have it, WE DO! We'll ship your drive when we promise, as we promise. We never charge your credit card until after your order has shipped from our factory. In the unlikely event that you have a problem with your drive, our exclusive "30 day performance guarantee" goes immediately into effect. We'll ship you a new drive over night\* and have the suspect drive picked up at our expense. After the first 30 days, our warranty turn-around time is 48 hours (often 24). We'll Ship back to you via overnight air\* - our expense. Our one and two year warranties include a thirty day money-back guarantee. Your toll-free phone call to either sales or technical support is answered by a real person 24 hours a day, none of those frustrating voice mail mazes that you find other places. Our goal is to care for you better and faster than the dealer down the street.

**5. Economy:** Our prices speak for themselves! APS consistently offers the lowest prices on immediately available inventory in the business. Our pricing is based on assembled, formatted\* products with everything you need to plug-n-play. Our external drives are available in externally terminated (with terminator) or internally terminated units, - your choice. Need a Mac to SCSI, or daisy-chain cable? Take your pick, - no extra charge. Need multiple units? Don't pay for the same piece of bundled software three times, buy them only if you need 'em\*. We have outstanding values on several "industry standard" drive utility products at as much as 80% off retail prices!

\*Some limitations may apply



**High  
Performance  
Drives for the  
Classic, LC & Si**

**\$399\***

\*Internal

**Performance  
30 DAY  
Guarantee**

**Quantum 10 - 12ms Access**

Capacity	Internal	External
<b>40 mb</b>	<b>\$ 259</b>	<b>\$ 349</b>
<b>52</b>	<b>329</b>	<b>429</b>
<b>105</b>	<b>379</b>	<b>469</b>
<b>105<sub>LPS</sub></b>	<b>499</b>	<b>599</b>
<b>120</b>	<b>639</b>	<b>729</b>
<b>170</b>	<b>729</b>	<b>829</b>
<b>210</b>	<b>799</b>	<b>899</b>

**MAXTOR 15 - 17ms Access**

Capacity	Internal	External
<b>40</b> <small>Low Profile, fits LC, Classic &amp; Si too!</small>	<b>\$ 299</b>	<b>\$ 399</b>
<b>80</b> <small>Low Profile, fits LC, Classic &amp; Si too!</small>	<b>399</b>	<b>499</b>
<b>200</b>	<b>859</b>	<b>959</b>

**Conner 25ms Access**

Capacity	Internal	Internal Configurations Only
<b>40</b> <small>Low Profile, fits LC, Classic &amp; Si too!</small>	<b>\$ 319</b>	
<b>120</b>	<b>599</b>	

<b>Syquest</b>	<b>45 meg Removable</b>	<b>\$ 529</b>
<b>Syquest</b>	<b>Dual 45 Meg 45 meg Removable</b>	<b>999</b>

• All Include one cartridge • \$72 per cartridge for additional cartridges

**WREN Drives 10.7 - 16ms Access**

<b>173</b>	<b>Half Height</b>	<b>999</b>	<b>1099</b>
<b>300</b>	<b>Half Height</b>	<b>1399</b>	<b>1599</b>
<b>300 mb</b>		<b>1249</b>	<b>1449</b>
<b>330</b>	<b>(RUNNER)</b>	<b>1499</b>	<b>1699</b>
<b>425</b>	<b>Half Height</b>	<b>1699</b>	<b>1799</b>
<b>600</b>		<b>1699</b>	<b>1899</b>
<b>630</b>		<b>1999</b>	<b>1999</b>
<b>1 Gig</b>		<b>2799</b>	<b>2999</b>

<b>Teac 155mb Tape</b>	<b>Include Retrospect</b>	<b>\$ 629</b>
<b>WangDAT</b>	<small>• All Include one cassette</small>	<b>1699</b>

**Dual Drive Combo's**

<b>1 gig WREN/WangDAT</b>	<b>\$ 4799</b>
<b>600 mb/WangDAT</b>	<b>3599</b>
<b>600/Teac 155</b>	<b>2599</b>
<b>600/SyQuest</b>	<b>2399</b>
<b>300/Teac 155</b>	<b>2049</b>
<b>300/Syquest</b>	<b>1999</b>
<b>330/Teac 155</b>	<b>2399</b>
<b>330/SyQuest</b>	<b>2299</b>

• All Tape Combo's Include one cassette and Retrospect!

• All SyQuest Combo's Include one Cartridge

**ASK ABOUT OUR OTHER COMBOS, SUN & IBM SCSI DRIVES**

All Drive products carry a 30 day Money-back guarantee. Quantum and Syquest Drives carry a two year "parts & labor" disk-for-disk replacement warranty. WREN, Maxtor, Teac, WangDAT and Syquest Cartridges carry a one year "parts & labor" disk-for-disk replacement warranty. All Hard Drives include all brackets, cables and cords and LED's required for operation. All Hard Drives come pre-formatted with Apple's latest stable System software, 18.8MB of Publicly Distributable software from the BMUG Library, and the "ALLIANCE POWER TOOLS" SCSI formatter/Partitioner. If your drive fails to perform properly in the first 30 days and our technical support staff can't solve the problem over the phone, we'll ship you a replacement drive overnight and have your defective drive picked up at our expense. Offer is subject to some limitations. Products being returned for credit and international orders do not apply.



**Alliance  
Peripheral  
Systems**

**2900 S. 291 Hwy • Lower H • Independence, MO  
64057 • (816) 478-8300**

**1-800-233-7550**

**0014 800 125 875**

Toll Free from Australia

**0800-897545**

Toll Free from U.K.

Toll Free U.S. and Canada  
VISA/MC, Corp., Gov., Univ. PO's, NO SURCHARGE  
AMEX ACCEPTED

International Orders Call (816) 478-8300

**9:30am - 7:00pm Central Time  
fax: (816) 478-4596 24hrs.**





# The Macworld Catalog

## Hardware

CD Rom .....	271
Bar Code .....	272
Computer Systems .....	272
Emulators .....	275
Memory Upgrade .....	275
Monitors .....	276
Peripherals .....	276
Printers .....	278

## Software

Air Travel .....	278
Architecture .....	278
Astrology .....	278
Bar Code .....	278
Business .....	279
CAD/CAM .....	279
Children's .....	279
Clip Art .....	279
CD ROM .....	279
Data Base .....	280
Educational .....	280
Engineering .....	281
Entertainment .....	281

Fonts .....	281
Genealogy .....	282
Graphics .....	282
HyperCard Stacks .....	282
Import/Export .....	282
Languages .....	282
Lottery .....	282
Medical .....	283
Multimedia .....	283
Music/MIDI .....	283
Nutrition .....	283
Programming Tools .....	284
Public Domain .....	284
Real Estate .....	284
Religion .....	284
Restaurant .....	285
Sales/Marketing .....	285
Scientific .....	285
Statistics .....	285
Training .....	285

## Services

Computer Insurance .....	286
Computer Repair .....	286
Data Conversion .....	286

Desktop Publishing .....	286
Disk Duplication .....	287
Laser Recharge .....	287
Multimedia .....	287
Repair .....	287

## Accessories

Furniture .....	287
Mouse Pads .....	288
Supplies .....	288

### *The Macworld Catalog* Advertising Rates & Information

*The Macworld Catalog* section is a monthly link-up for advertisers and volume purchasers of Macintosh-related products and services. The Catalog offers advertisers a low-cost marketing opportunity and provides readers with a timely, easy-to-use menu for product buying.

Display ads are sold by column inches (2" minimum). Standard red is available as a second color. Text-only listings are available for a minimum of three issues at \$520 per issue.

For more information on *The Macworld Catalog*, call 800/888-8622.

### *The Macworld Catalog* Advertising Sales Staff

Beverly Schneider, Telemarketing Sales Manager  
Niki Stranz, Western Account Manager, 415/978-3105  
Carol Felde, Eastern Account Manager, 415/978-3152

501 Second Street  
San Francisco, California 94107  
800/888-8622

*Categories are subject to change*

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



Hardware

CD Rom

## CD ROM

800-541-2318

One Stop  
CD Shopping

**Maya**  
Computer

**Chinon \$589**  
**CDA-431**

350 ms, RCA Output, bundled with Educorp - PD Collection 2.0

...Great prices on CD Hardware and

CD ROM Drives...	
NEC CDR 3501 Portable w/ Interface	489
NEC CDR 72 w/ Interface	679
Toshiba XM 3201A	529
Apple CDD	699
Apple CDD	649
Apple CDD	1089
Apple CDD	1125
Pioneer DRM-600 Six disc changer	8
CD Caddies each	
<b>Denon DRD-253</b>	<b>\$629</b>
with Shakespeare, Sherlock Holmes, & Audubon	

**The Complete Works**  
**3 Disc Pack**  
Shakespeare  
Sherlock Holmes  
MultiMedia Birds of America

**\$69**

General Titles	
Broderbund - Whole Earth Catalogue	88
Microsoft Office	549
Xiphias - National Directory	118
Wayzata - North American FAX Disc	322
Wayzata - 150000 business mailing addresses and Fax numbers	97
Wayzata - Front Page News	
Full text of over 10 wire news services - 11/89 to 9/90	

**Wayzata \$39**  
**"FUN HOUSE"**

A public domain collection of the best shareware & freeware games available for the Mac. Approx. 300 hand-picked games in 6 categories - Adventure Land, The Games Parlor, The Arcade, Star Fleet Headquarters, The School House, The Casino.

NOW SHIPPING!

### Clip Art Titles

Comstock - Photo Vol 1 - B&W, Gen. Topics	131
Comstock - Photo Vol 2 - Business	59
Discimagery - Pro Photo Collection	97
Image Club - Artroom	450
Image Club - Darkroom	226
Image Club - LetterPress	2648
Image Club - LetterPress Art & Type Vendor	56
Image Club - LetterPress Art & Type Vendor	129
Macromind	300
Media Clip Art	254
NEC Clip Art 3D	254
Over 2500 Three Dimensional Images. Categories include Geography, Human figures, transportation, buildings, food.	
NEC Type Gallery PS	264
Over 500 Adobe® Postscript™ typefaces. Choice of 15 typefaces available with purchase of disk. Remainder can be unlocked with keys purchased from NEC.	
NEC Photo Gallery	268
1500 high quality digitized stock photos (TIFF Format) in 20 categories.	
NEC Image Gallery	194
Wayzata - Quick Art	129
2200 repro quality TIFF images at 300 dpi, catalog.	
Wayzata - Down to Earth!	116
600 close-ups of our natural environment	
Wayzata - Publique Arte	97
2000 images - maps, aircraft, tools, symbols, etc.	
Wayzata - Clip Art Masterpieces	97
1300 images - TIFF and PICT in 23 categories	

### PD Software Titles

BMUG CD ROM Volume 2	59
6900 files - 1000 Stacks, 800 Fonts, 600 Utilities.	
Educorp - PD Collection 5.0	149
NYMUG CD ROM	39
Quantum Leap - The Right Stuffed	40
Quantum Leap - MegaRom 2.0	24
Quantum Leap - CD7	49
Quantum Leap - Macademic	71
Quantum Leap - GigaROM	99
The worlds largest collection of Macintosh public domain software and shareware. 11,089 files archived in "Compactor" Format. Includes On Location™ index for fast access to any file.	
Wayzata - GEM	77
620mb of the newest PD and Shareware software	

### Education Titles

CMC ReSearch - Sherlock Holmes on Disc	29
Complete text of all Sherlock Holmes stories by Sir Arthur Conan Doyle with pictures, poetry and Medical Casebook of Dr. Arthur Conan Doyle.	
CMC ReSearch - Shakespeare on Disc	29
Complete text of all Shakespeare's works, in both American, and Queen's English, Fully indexed, text, titles, and table of contents.	
CMC ReSearch - Birds of America	29
MultiMedia - 1840 first edition "Octavo" set of Audubon's Birds of America. Fully indexed, includes a table of contents. Also includes CD Quality bird calls for many birds, and 500 full color bird lithographs.	
Discus Books	
Interactive learn-to-read lessons on CDs that teach and entertain. For children ages 3 and up.	69
Discs - The Tale of Peter Rabbit	55
Discs - The Tale of Benjamin Bunny	59
Discs - Thomas' Snowsuit	59
Discs - Mud Puddle	55
Discs - The Paper Bag Princess	55
Discs - Cinderella	69
Discs - Scary Poems for Rotten Kids	55
Discs - A Long Hard Day on the Ranch	69
Discs - Heather Hits Her First Home Run	69
Discs - Moving Gives Me a Stomach Ache	69
Discs - 10 Pack	374
Lingua-ROM	
Hyperplot language tutor lessons for Spanish, French, Russian, German, Italian, Chinese, and Japanese.	236
Grolier - Grolier's Encyclopedia 1990	144
Highlighted Data - Webster Talking Dictionary	144
Text and graphics of the best selling Webster's Ninth New Collegiate Dictionary.	
Highlighted Data - Electronic Map Cabinet	144
Electronic map of the United States and hundreds of cities. Includes software for displaying these maps at any resolution.	
HyperPlot - Learn to Speak French - 2 CD	176
Mediagenic - Manhole	36
Fantasy Exploration for children of all ages.	
Mediagenic - Cosmic Osmo	49
100 megabyte adventure game	
Xiphias - Table of Science & Technology	99
Wayzata - About Cows (w/Pictures)	25
Folklore, cheese making, artificial insemination, cow myths etc.	
Wayzata - CIA World Fact Book 1990	84
Comprehensive profiles on over 250 countries	
Wayzata - Middle East Diary	89
History, personalities and conflicts.	
Wayzata - USA Fact Book 1990	

### Music/Sound

Farallon MediTracks Multimedia Pack	328
Passport - Desktop Music Creativity Kit	189
Passport - Pro Music Kit	1449
Voyager - Beethoven Symphony # 9	79
Hypercard program teaches about Stravinsky. Symphonic music and the 9th Symphony specifically.	
Voyager - CD Audio Stack	79
Allows you to make your own Beethoven's 9th type stack by controlling your CD ROM drive while playing Audio CDs.	
Voyager - Brandenburg Concerto	79
Voyager - Stravinsky: Rite of Spring	44
Hypercard program teaches about Stravinsky, the original production inner workings of his music.	
Warner - Magic Flute	44
The complete opera (143 minutes), on-screen commentary and annotation about the opera.	
Warner - Beethoven's 14th String Quartet	44
Warner - German Requiem	

**GigaRom**  
**\$79**

Regular \$99 Value  
with purchase of any other CD ROM title in this ad.

**Quantum Leap**

Macademic	\$71
CD7	\$49
The Right Stuffed	\$40
MegaRom 2.0	\$24
GigaRom	\$99

Special!

**GigaRom with OnLocation**  
**\$150**

GigaRom is made to be used with OnLocation for fast & easy retrieval.

**Maya**  
Computer

Maya Computer, Waitsfield, Vermont 05673  
802-496-6982 • 802-496-8110 FAX • 0120-425-622 TOKYO

800-541-2318

CIRCLE 405 ON READER SERVICE CARD

Wherever the market goes, Macworld is there first!

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## Bar Code

### BAR CODE & MAGNETIC STRIPE READERS FOR MACINTOSH PLUS, SE & II

Connects on keyboard or ADB  
Requires no additional program or port  
Does not affect keyboard or mouse  
Industrial quality, heavy-duty units  
Also available

SmartCard encoder/reader  
Magnetic encoder  
Code 39 UPC & Printing Software  
Portable Bar Code Reader

**TPS Electronics**  
4047 Transport Street  
Palo Alto, CA 94303  
415-856-6833 800-526-5920  
Telex: (Graphnet) 371 9097  
FAX: 415-856-3843

CIRCLE 441 ON READER SERVICE CARD

## Computer Systems

### DATA COMPUTER CENTER

Mac Classic 2/40	Call
Mac LC 2/40	1875
Mac IIsi 2/40	2625
Mac IIsi 5/80	3175
Mac IICX, IICi, IIX	call
Mac IIFX 8/170	7245
Mac Portable 1/40	2950
New Mac Portable in stock	
Imagewriter II	425
IINT/ IINTX	2975/3975
QMS PS-410	1999
HP DeskWriter	759
RasterOps Clrvu II	1075
Ikegami 20" 2pg	3585
Radius Pivot & card	1195
SuperMac 19" trin.	2295
Dealers & international orders welcome. We won't be undersold call now.	

TEL: (213) 470-9555  
FAX: (213) 470-9457  
2253 Westwood Blvd. LA, CA 90064

CIRCLE 508 ON READER SERVICE CARD

## 1-800-334-KIWI

Mac Classic 40/2mb.....	\$call
Mac LC 40/2mb.....	\$call
Mac LC 105/4mb.....	\$call
Mac IIsi 40/2mb.....	\$2695
Mac IIsi 105/5mb.....	\$3295
Mac SE/30 105/5mb.....	\$3595
Mac IICi 105/5mb.....	\$4495
Mac IICi 170/5mb.....	\$4795
Mac IIfx 105/4mb.....	\$6595
Mac IIfx 170/4mb.....	\$6895
Apple monitors.....	\$call
Imagewriter II.....	\$435
Personal Laser NT.....	\$2295
Laserwriter IINT.....	\$3100
Laserwriter IINTX.....	\$4195
H.P. Deskwriter.....	\$725

All items new. 1 year warranty.  
Most items in stock today.  
Visa & Mastercard add 2%  
C.O.D. orders accepted.

**KIWI COMPUTERS**  
P.O. Box 67381  
Los Angeles CA 90067  
US & Canada (800)334-5494  
International (213)553-4507  
Fax (213)286-9667  
Mon-Fri 8.30am-4.30pm PST

CIRCLE 404 ON READER SERVICE CARD

## The Macintosh® for Industry

For your off the desktop applications, there is RackMac™

An industrial grade Macintosh IIX or IIfx available with matching industrial touchscreen display and rack-mounted keyboard/mouse drawer.

For vehicular, medical, laboratory, automated test, process control, and operator entry applications.



### GreenSpring Computers

1204 O'Brien Drive Menlo Park, CA  
94025 Tel 415-327-1200

CIRCLE 519 ON READER SERVICE CARD



**\$189**  
per mo

Mac  
SE

Next Day Delivery  
Anywhere in the U.S.A.

**PC Computer Rental**

## RENTALS

### Also Available:

- Macintosh • IBM PS/2
- Compaq • Laser Printers
- Laptops • Portables

And a host of other peripherals

Call Toll-Free

**800-765-4727**

CIRCLE 483 ON READER SERVICE CARD

## Great Mac Buys

### Computers

Mac Plus	\$595
Mac Plus 1/40 HD†	\$995
Mac Plus 2.5/40 HD†	\$1095
SE Duo	\$895
SE 1/20	\$1095
SE 2.5/20	\$1295
SE 1/20 FDHD	\$1195
Mac II 1/40	\$2595
Mac II 4/40	\$2845
Lisa/1Mb RAM/800K	
20Mb SCSI HD	\$595

Lisa works like Mac Plus!  
†Includes a new Conner internal 40Mb SCSI hard drive.

### Hard Drives

Sun SCSI 20 Ext.	\$249
Sun SCSI 40 Ext.	\$439
External SCSI case only	\$124
400K ext (used)	\$39
400K ext. (new)	\$59
800K ext. (new)	\$159

### Printers

Olympia NP60 (new)	\$329
Seikosha 2000 AP (new)	\$249

Printers are ImageWriter compatible.

### Modems

Star 2400 Baud (new)	\$109
----------------------	-------

### Software

MS Works v2.0 (new)*	\$129
BPI Entry Series*	\$19
Electric Checkbook *	\$19
Business Filevision*	\$25
Focal Point*	\$19
MacNET*	\$19

### Much More...

Cables•Accessories•Dust Covers•Repair Parts•Manuals•Etc.  
Our free catalog has it all.

\*Indicates factory packaged software.

**30-Day Money-Back Guarantee**

◆ **Reconditioned** ◆

**90-Day Parts & Labor Warranty**

**Sun**  
Remarketing, Inc.

Call for FREE catalog 24 hrs. a day.

**1-800-821-3221**

P.O. Box 4059 — Logan, Utah 84321—Fax: 801/755-3311

CIRCLE 424 ON READER SERVICE CARD



Shreve  
Systems

3804 Karen Lane  
Bossier City, La. 71112

**800-227-3971**

## Parts/Systems

New & reconditioned

Call us! We Buy & Sell!

**Mac-IBM** No quantity too large!

FAX 318-742-2799

Call for catalog!

CIRCLE 425 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## We Buy Used Mac's

- We Take Trade-ins. Trade-in your Old Computers for New Systems.
- We do Upgrades. Upgrade your XT to a 386. Add Memory or Speed to your Mac Hard Drives

**ACP**

1317 E. Edinger 92705  
Santa Ana, CA 92705  
714/558-8822 • 800/347-3423  
Fax 714/558-1603  
Established 1976

Call  
Jim or Penny

## We Buy Used PC's

CIRCLE 529 ON READER SERVICE CARD

**L.A. Mac!**

- ☆ NO! Help\*
  - ☆ NO! Stock\*
  - ☆ NO! Bargains\*
- \*see your local dealer for details...

Today is the day,  
to find alternatives...

- L.A. Mac! Professionals help end MacConfusion.
- L.A. Mac! Is easy to talk to because we listen.
- L.A. Mac! Has complete Macintosh systems.
- L.A. Mac! Has products from leading manufactures.
- L.A. Mac! Has a better way to do business.
- L.A. Mac! Lets customers purchase for their needs.
- L.A. Mac! Offers best pricing, no sales gimmicks.
- L.A. Mac! Fast service is just a phone call away.
- L.A. Mac! Feels that our customers come first.
- L.A. Mac! Welcomes Purchase Orders and leasing.
- L.A. Mac! Is "smarter than the average bear!"
- L.A. Mac! Has Toll-Free technical support.
- L.A. Mac! Provides a free one year warranty.

We take the "byte" out of MacPrices!

**1-800-752-4789**

Fax your request Worldwide 213-680-4789

Call L.A. Mac! First, then Compare.

Make an informed decision!

Geared to the needs of the most demanding users...  
or the first-time buyer!

An L.A. Mac! is a Happy Mac...



CIRCLE 528 ON READER SERVICE CARD

## WANTED: USED MAC'S

WE BUY YOUR USED MAC EQUIPMENT FOR TOP DOLLAR, CASH! WE SELL REFURBISHED MAC'S AT DISCOUNT! CALL FOR QUOTE. **RENTEX INC.** (800) 545-2313, (617) 423-5567

CIRCLE 521 ON READER SERVICE CARD



## ELITE COMPUTERS & SOFTWARE

BUY • SELL • TRADE • LEASE

Join The Elite!  
Buy The Best In New And Used Macintosh Equipment

Mac Plus / Mac SE 20Mb..... \$699 / \$1299  
Mac IICx / Mac IICx 40/1..... \$2349 / \$2599  
Mac SE 30 40/1 (New)..... \$2788  
LaserWriter IINT / IINTX..... \$2399 / 3199  
LaserWriter Plus..... \$1949  
QMS PS410 Laser Printer..... Cost +7%  
Full Pg. / Two Pg. Display..... \$599 / 799  
**Lowest Prices Guaranteed !!**

Authorized Dealer: CMS, Radius, RasterOps, SuperMac, Claris, Abaton & More!



10601 South De Anza Blvd • Suite 305 • Cupertino • CA • 95014  
**(408) 725-1556 • (408) 973-1483 Fax**

Prices are subject to change without notice. These are cash prices. Quantities are limited!

CIRCLE 493 ON READER SERVICE CARD

MAC Classic 2/40 ..... CALL  
MAC LC 2/40 ..... IN STOCK  
MAC II si 2/40 ..... 2599  
MAC II si 5/105 ..... 3199  
MAC SE/30 2/40 ..... 2799  
MAC II ci 5/105 ..... 4299  
MAC II fx 4/80 ..... 6399  
NEW MAC Portable 1/40 3049  
Personal IISC/NT . 1399/2199  
LaserWriter IINT ..... 2999  
LaserWriter IINTX ..... 3999  
HP Deskwriter ..... 659  
Radius Pivot for MAC IISI .. 849  
MAC Portrait Monitor ..... 789  
NEC Silentwriter 2 M90 6ppm  
Postscript & AppleTalk .. 1699  
MAC SYNC HC Monitor ..... 429  
Extended Keyboard for MAC... 129

WE ONLY SELL  
BRAND NEW COMPUTERS

**MicroUSA**

(213) 473-2535

Fax (213) 473-5236

C.O.D. orders and P.O.'s are welcome • Prices subject to change without notice

CIRCLE 427 ON READER SERVICE CARD

**Mac Masters**

INTERNATIONAL

ALL HARD/SOFTWARE IN STOCK!

BEST PRICE & SERVICE - PERIOD.

12 MONTH MasterCare™ WARRANTY

• CANADIANS •

DUTY PAID TO YOUR DOOR

GOV'T, CORPORATE & UNIVERSITY PURCHASES WELCOME

**CALL US LAST!!!**

**1-800-668-2037**

CIRCLE 426 ON READER SERVICE CARD

*"I saw it in  
Macworld!"*

**Continued...**

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## MAC SYSTEMS

(800) 767-7706 (800) 732-5678 (818) 901-1001

FAX (818) 891-3285

FAX (213) 470-8099

2604 MIDVALE AVE L.A., CA 90064

One year warranty.  
Most items in stock.  
All merchandise new.  
No tax outside California  
Visa & MC add 2%.  
Amex add 4.5%.  
Next day air shipping available.

MAC CLASSIC 2MB 4MB	CALL
MAC LC	CALL
MAC II SI 2MB 40MB	2695.00
MAC II SI 5MB 80MB	3495.00
MAC II CI 5MB 80MB	4595.00
MAC II CI 8MB 170 MB	5095.00
MAC II FX 4MB 105MB	6750.00
MAC II FX 8MB 170MB	7295.00
MAC PORTABLE 2/40 MB	2995.00
MAC PORTABLE 4/40MB	3495.00
DATADESK KEYBOARD	165.00
DATADESK SWITCHBOARD	175.00
APPLE STANDARD KEYBOARD	99.00
APPLE EXTENDED KEYB	175.00

SYQUEST REMOBEABLE	CALL
NEC CD ROM PORTABLE	499.00
TOSHIBA CD ROM	750.00
STORAGE DIMENSIONS CD	CALL
GCC ACCESSORIES	CALL
GCC PLP II PS UPGRADE	CALL
NEC SILENTWRITER II	
MODEL 90 6PPM 2MB	
POSTSCRIPT PRINTER	1750.00
QMS 410 PS PRINTER	2095.00
PANASONIC PS 11PPM	1995.00
APPLE PERSONAL NT	2395
LASERWRITER II NT	CALL
LASERWRITER II NTX	CALL

APPLE IMAGEWRITER II	439.00
APPLE PERSONAL SC	1439.00
KODAK DICONIX 150MB	439.00
APPLE 13" RGB MONITOR	720.00
APPLE PORTRAIT MONITOR	249.00
NEC MACSYNC MONITOR	475.00
RADIUS PIVOT W/CARD	1195.00
RADIUS 19" TPD W/CARD	1395.00
RADIUS 21" TPD W/CARD	1695.00
RADIUS DIRECTCOLOR 8	3995.00
KEGAMI 20" COLOR 8	2695.00
KEGAMI 20" COLOR 24	3895.00
SUPERMAC 19" COLOR 24	4795.00
PANASONIC 1024 X 768	499.00
SONY 1304 1024 X 768	69.00

International Orders Welcome

ALL PRICES SUBJECT TO CHANGE

CIRCLE 452 ON READER SERVICE CARD

## You won't get your Mac overnight.

But, in about a week, you'll get the best price anywhere on a fully-configured, bench-tested Mac system.

You'll also get toll-free tech support, and free warranty repair-or-replacement via Federal Express.



If you really need it tomorrow, call the guys who slam out boxes. Or, call us for lower prices, more expertise...

...and other things that don't happen overnight.

Fax: 213-322-1486 • International: 213-322-1455

©1991 2M Group, Inc.  
dba Mac•In•Stock®  
El Segundo, CA

**Mac•In•Stock®**  
800-633-1538

CIRCLE 457 ON READER SERVICE CARD

**Used Mac Equipment!**  
Access II

26 Keewaydin Drive  
Salem, NH 03079  
800-666-5612

Don't buy or sell any new or used equipment until you talk to us. We deal exclusively in Macintosh equipment. Call today for the best deals anywhere!

CIRCLE 469 ON READER SERVICE CARD

**MacOne** Your #1 Export Source For Macintosh  
Glen Head, N.Y. 11545

Fast & Reliable Worldwide Delivery • All 110/220 Volt  
Mac Classic 2/40 \$1389 (110v) Mac LC2/40HD \$1799  
Mac II si 2/40HD \$2649 • Mac II si 5/80HD \$3199  
Si Nubus Card \$199 • SE30: 1/40HD: \$2949 • 4/80HD: \$3749  
MacIIx: 4Mb/1.44: \$3999 • 4/80HD: \$4499 • 8/105HD: \$4799  
MacIIx: 4Mb: \$6199 • 4/80HD: \$6599 • 8/170HD: \$7199

RasterOps 19" B/W \$1199 • GreyScale \$1599 • 24L \$5399  
RasterOps 364-PAL \$899 • 19" Trinitron Color: 8 or 24 bit \$2599 • \$3699  
Apple 13" RGB/A4 Portrait \$699 • 799 • Abaton 24/96 InterFax 220V \$349  
24 Bit Color Scanners: Microtek 3002S \$1789 • Abaton Color300 \$1389  
Syquest 45Mb Removable 220V \$529 • Microtech Nova320Mb \$1299  
NewGen 480 (800x400 dpi) Laserwriter in 220V/A4 \$5299

'New York Style' Discounts... Anywhere in the World!  
Small Ads mean BIG Savings for YOU!  
U.S.A. Sales Line **516. 626. 5572** Monday - Friday 10am - 8pm EST  
FAX US FOR SAME DAY QUOTES! Fax# 516.626.5573

CIRCLE 410 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



Emulators

Memory Upgrade

## II in a Mac

An Apple IIe computer  
...all in software!

Run Apple II software on  
your Macintosh.

Convert Apple II files to  
Macintosh files.

**\$149.95** Add \$3 for P&H

COMPUTER:applications, Inc.

12813 Lindley Drive Raleigh, NC 27614  
(919) 846-1411

CIRCLE 504 ON READER SERVICE CARD

It's simple.

Macworld  
gives you all  
the important  
buyers with  
a single  
buy.

August Catalog  
ad close date:

May 22

Call  
800/888-8622  
to reserve your  
space.

## MEMORY DIRECT

"Don't pay retail...buy direct"

Memory Upgrades for your Macintosh

VIDEO  
RAM

### MAC CLASSIC

1 MEGBOARD	98.
2 MEG KIT	96.

### MAC II/SI

2 MEG KIT	98.
4 MEG KIT	195.
8 MEG KIT	385.
16MEG KIT	890.

### MAC II, IIX, IICX, IICI

4 MEG KIT	195.
8 MEG KIT	385.
16 MEG KIT	890.
32 MEG KIT	1770.

### MAC PORTABLE

1 MEG KIT	210.
2 MEG KIT	510.
3 MEG KIT	775.
4 MEG KIT	990.

All true static

### MAC +, SE, SE 30\*, LC

2 MEG KIT	98.
4 MEG KIT	195.
8 MEG KIT*	384.

### MAC FX & LASERWRITER II NTX

1 MEG KIT	89.
4 MEG KIT	220.
16 MEG KIT	910.
32 MEG KIT	1820.

We also carry Laser Printer  
Memory and Math Co Processors

Upgrading your Apple is easy and inexpensive!

Let the Pros at Memory Direct tell you how!

Call now to order

P.O.s accepted for:

- Fortune 1000
- Government
- Educational Institutions

1-(800) 486-CHIP (2447) FAX Orders: (714) 847-5043

Call us Toll-Free for step by step installation instructions!



Highest Quality  
Lifetime Warranty  
Free tool included  
Same day shipping

Memory Direct • 7911 Professional Circle • Huntington Beach, CA 92648

Your memory source for Apple, IBM, Compaq, Hewlett Packard, AST, Epson and More!

CIRCLE 516 ON READER SERVICE CARD

## Big Life on the Big Screen For The Mac Portable.

once you see  
me on the big  
screen you'll  
never let me go!



Add Video Mac Pac to any Mac Portable and you can use any standard video monitor in addition to the Portable screen. Use with an overhead projector screen for presentations, classes or demonstrations.

**Makes any standard single page monochrome monitor very happy.** The video driver, which plugs into the expansion slot, supports all common monitors, specifically:

TTL Full Page	640 x 860	Super VGA	800 x 600
TTL EGA	640 x 350	NTSC Composite	272 x 208
TTL Multiscan	640 x 480	Overhead Projector Screens	
Standard VGA	640 x 480		

This video circuitry was developed in collaboration with Lapis Technologies.

We design, make and market 256K, 1 meg and 4 meg SIMMs, fx Liberator, Softstep® memory expansion modules, Pac RAM for the

Portable, Video Mac Pac for the Portable, Mac Rescue™ and Mac Rescue™ Video, upgrade boards for Enhanced 128K & 512K Macs and Mac Stretch for the new Classic. All have a one year warranty. Call today!

Ford Centre, Suite 1180  
420 North Fifth St.  
Minneapolis, MN 55401  
(612) 371-0061  
(800) 950-CARE (2273)  
(612) 371-9342 Fax



**Computer Care**

Dealer Inquiries Welcome. Visa, MC, AMEX, Discover Accepted.

CIRCLE 505 ON READER SERVICE CARD

Continued...


For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



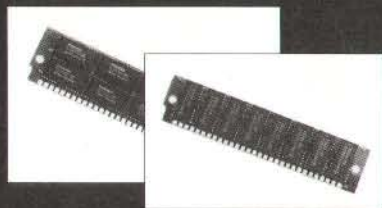


# The Macworld Catalog

## MAC MEMORY

- 1 MEG Modules
- 4 MEG Modules
- IIfx Modules
- NTX Modules
- SuperStatic 3 Portable Modules MacUser Rated 
- New 2 MEG IIsi/ci Modules
- Lifetime Warranty
- 30 Day Money-Back Guarantee!

**BEST PRICES!**  
**FREE**  
**INSTALLATION KIT**  
**TOLL-FREE**  
**SUPPORT**



**Technology**WORKS

4030 Braker Lane West  
Suite 350  
Austin, Texas 78759  
512-794-8533 x1701

**CALL OR FAX  
YOUR ORDER  
OR INQUIRY! 1-800-688-7466**  
**FAX# 512-794-8520**

CIRCLE 456 ON READER SERVICE CARD

## Monitors

### BEST MONITOR PRICES!

<b>RasterOps</b>	208 Card	\$379.
	24L Card	\$2795.
	ClearVue/GS19"	\$1499.
	8L 16" System	\$3525.
	8L 19" System	\$3995.
	24L 19" System	\$5319.

<b>E-Machine</b>	Big Picture Z21 SE	\$1695.
	Big Picture Z21 IQ	\$2310.
	T-19 w/card	\$4095.

<b>SuperMac</b>	PlatinumTwo Page	\$1731
	Spec/8 19" Color	\$4195
	Spectrum/24 III	\$2065

### Radius



HayesV-Series smart  
modem 9600 with purchase  
of \$15,000.  
*Limited Quantity.*

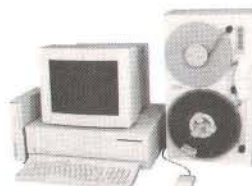
**Call Now! 1-800-222-1648**  
*Visa, MC, COD, Check*

**ISI** Innovative Systems Inc.  
143 Shaker Road E. Longmeadow, MA 01028

CIRCLE 472 ON READER SERVICE CARD

## Peripherals

### 9-Track Tape Subsystem For the Macintosh™



Exchange data files between your  
Macintosh and any mainframe or  
mini-computer using IBM compat-  
ible 1600 or 6250 BPI 9-track tape.

Unit can also be used for disk  
backup. Transfer rate is up to 16  
megabytes per minute via your  
SCSI interface. Subsystem includes,  
tape drive, software, and complete  
documentation. For more  
information, call us today!

**QUALSTAR®**

9621 Irondale Avenue  
Chatsworth, CA 91311  
FAX: (818) 882-4081  
Telephone: (818) 882-5822

Macintosh is a trademark of Apple Computer, Inc.

CIRCLE 414 ON READER SERVICE CARD

Did you  
know that:

- Over one-third of all Macworld subscribers do not read any other Macintosh-specific publication?
- The average Macworld subscriber has used a personal computer for almost 6 years?

- Macworld subscribers hold high level positions in their organizations and more than 80% are active participants in the purchase of computers and third-party products?

- Macworld subscribers give purchase advice to an average of 18 people per month?

Source: 1990 Macworld Subscriber Study

## PortaRam™

**NEW!**  
for the  
Mac  
Portable



\$295 per  
Mega-  
byte  
(1 to 8)

- One to Eight Megabyte • All Gold Plated boards
- User Upgradable • Built-in Surge Protector
- Uses RAM Slot • Not PDS • Very Thin 5/8" Max

Also available for your other Mac's:

- 16 or 32 MB SIMM kit (4 or 8 - 4 MB/-80 ns) for the Mac II, IIfx, IIfx, IIfx, IIfx, or IIfx \$995/\$1990
- 4 MB kit for the IIfx or LaserWriter II NTX \$295
- 3 MB upgrade for the new Mac Classic \$195
- 2 MB SIMMs for the Mac IIfx and Mac IIfx \$155
- 8 MB kit for the new Mac LC or SE/30 \$495

**Shadow Technologies**

1767 Morning Glory Road  
Livermore, CA 94550  
(415) 548-0130

CIRCLE 462 ON READER SERVICE CARD

## UPGRADES!

512Ke - Plus \$295  
512K - Plus \$625  
128K - Plus \$695

## MEMORY WE ARE LOWEST!!!

### Peripheral Outlet

314 S. Bdwy • Ada, OK 74820

**(800) 332-6581**

405-332-6581 Fax 405-436-2245

*Visa & MC okay (add 3%)*

CIRCLE 454 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## SyQuest! 479.00!

44MB Removable  
Includes One  
Cartridge!

## Sharp Scanners!

JX450 \$4,295  
Professional 300 DPI  
Color Scanner

JX300 \$2,149

JX100 \$689

## WREN! Drives! 337MB Runner \$1448!

	Internal	External
300MB F/H	\$1248	\$1448
300MB H/H	\$1698	\$1798
337MB Runner	\$1448	\$1528
404MB H/H	\$2148	\$2248
600MB F/H	\$1688	\$1768
1.2Gig	\$2594	\$2694

1 Year Warranty, 100,000 Hours MTBF\*

## Chinon CD ROM Drive \$599.00

- Fast 350ms access
- Apple Compatible
- Versatile software

## Quantum Drives! 40MB \$268!

	Internal	External
40MB 3.5"	\$258	\$338
52MB 3.5" LPS*	\$304	\$394
80MB 3.5"	\$378	\$468
105MB 3.5"	\$378	\$468
105MB 3.5" LPS*	\$488	\$588
120MB 3.5"	\$589	\$658
170MB 3.5"	\$708	\$778
210MB 3.5"	\$798	\$898

2 Year Warranty, 50,000 Hours MTBF\*

\*LPS= Specially designed for the Classic  
and the Mac LC

## Fujitsu...The worlds most reliable drives... 800K Floppy Drive \$99.00!

	Internal	External
45MB 3.5"	\$258	\$328
90MB 3.5"	\$358	\$458
135MB 3.5"	\$448	\$548
185MB 3.5"	\$598	\$698

3 Year Warranty, 50,000 Hours MTBF\*

## External 800K Floppy \$99.00!

The Fujitsu floppy drives are new drives  
with one year warranties. These are the  
same drives that retail for 259.069

## 45MB \$258!

3 Year Warranty! 16ms  
50,000 hrs MTBF!

## Fujitsu 5.25" Drives

	Internal	External
357MB 5.25 Full Height 16ms access	\$1348	\$1448
680MB 5.25 Full Height 16ms access	\$1748	\$1848
1200MB 5.25 Full Height 14ms access	\$2698	\$2798

5 Year Warranty on all 5.25" drives

200,000 Hours Mean Time Between Failure\*  
24 hour factory replacement available for addi-  
tional fee

## Mac!Direct!

## 800-621-8467

60 East Chestnut -145, Chicago, IL, 60611

Visa, M/C, COD, Telecheck Approved Checks, Gov, Corp, Univ. P.O.s Welcome/ New Drives, Factory Warranty, / Bracket, cables and software included/ 30 Day MBG/ Hours 8:30-7:00 CST, Saturdays 10:00-4:00

CIRCLE 467 ON READER SERVICE CARD

The Best Products from  
*RasterOps*  
The Best Prices and  
service from



<i>RasterOps</i> Video ColorBoard 364	\$890
<i>RasterOps</i> Business Color System	\$2650
<i>RasterOps</i> ProVideo 32	\$1390
<i>RasterOps</i> 24L 19" Color System	\$5730
<i>RasterOps</i> ColorBoard 24si	\$790
<i>RasterOps</i> Video ColorBoard 24stv	\$1290
<i>RasterOps</i> ClearVue/XL 21" Mono	\$1580
<i>Special for the new Macintosh LC</i>	
<i>RasterOps</i> ClearVue/LC 19" Mono	\$1290
<i>RasterOps</i> 8LC 19" Color System	\$2730

Nationwide

## 1-800-626-1889

Authorized RasterOps Dealer

6113 South 380 West, Salt Lake City, Utah 84107 (801) 265-8882

CIRCLE 541 ON READER SERVICE CARD

CALL FOR NEW  
PRODUCT INFO



**MacOutlet**  
GRAPHICS DISPLAY SYSTEMS SPECIALISTS

Toll Free (800) 622-6885  
Bay Area (415) 623-8890  
Canada (800) 833-6698

E-MACHINES T-16" TRINITRON	\$1895
MICC EXTERNAL 9600 BAUD MODEM	\$479
Seiko 14" Trinitron with Tilt Swivel Base	
Bundled with RasterOps 264/364	\$949/1398
RasterOps ProVideo 32 System	\$1149
RasterOps Accelerated mono for SE	\$1189
RasterOps Business System 19"	\$2795
RasterOps NEW 21" System for LC	\$CALL
RasterOps NEW 19" Grey Scale for LC	\$CALL
RasterOps NEW 19" 8 bit Color for LC	IN STOCK
DMA Optical 650 Meg Drive	\$2995

48860 Milmont Dr., Fremont, CA 94537

**AUTHORIZED RASTEROPS AND E-MACHINES DEALER**

CIRCLE 438 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## Printers

### CRA Systems Inc.

700 SOUTH UNIVERSITY PARKS DR.  
WACO, TX 76706

CPU's (Se, Se30, Si, Lc, II, Cx, X, Ci, Fx)  
Apple Laser Writer Plus, IInt, Ntx  
Apple Color & Monochrome  
Apple Scanner 300dpi 16 GS  
Sharp JX450 11x17 24-bit scanner  
HP ScanJet 400dpi 16 GS  
Quark 2.1 \$30 Upgrade to 3.0

### We Buy and Sell New and Used Systems Any Quantity

Call us for a quote on your mac

Call	Sigma L-View mono 19" w/card	\$1295
Call	Dest Flatbed scanner w/sheetfeeder	\$1495
Call	Rodime 140 meg HD	\$695
\$1095	Mitsubishi 16" color w/card	\$1595
\$3995	Sony 13", 14", 19" Trinitron	Call
\$795	RasterOps and Radius	Call
\$395	Call for Software List	Call

**CALL (817) 754-2120**

(817) 754-2345 fax University And Corporate PO'S Welcome

CIRCLE 499 ON READER SERVICE CARD

**Apple Daisywheel Printer**  
TRUE letter quality on all Mac's &  
Apple II's. Fast 40 char./sec. on 1-page/  
6-part forms, 198 column, bold face,  
fixed/proport fonts. NEW \$449,  
RECOND. \$349 incl. easy mac point-&  
click printer resource, I/F cable, print  
wheel, & ribbon. Incl. foreign, legal &  
math symbols. New sheetfeeder \$49.  
Tractor \$149. Commercial quality w/  
90-day guarantee.

*Quality Discount Computers Inc.*

135 Artist View Dr.

Wellington, NV 89444

702/465-2473, 415/487-8148

## Software

### Air Travel

### Travel by air? Need schedules fast?

**Take Flight!**™ gives you easy access  
to travel information and booking.

A new point-and-click interface to the  
Official Airline Guides®  
Electronic Edition

- No more codes to decipher or remember
- Save on connect charges
- Check as many alternatives as you like
- Information saved and organized for later reference



Requires: modem and  
access to Compuserve®

\$149 • Call 800-253-5542

LATERAL THOUGHTS

335 Pearl St, Cambridge MA 02139

CIRCLE 517 ON READER SERVICE CARD

## Architecture

### DESIGN YOUR OWN HOME™

on your  
Macintosh, IBM,  
Apple II's or IIGS

#### Architecture

Draw floor plans or side views with architectural  
scales, grids and overlays. Use the stud/beam  
repeater to calculate lumber. Dozens of architectural  
symbols included.

#### Interiors

Draw room plans, arrange furniture and explore color  
schemes. Includes predrawn furniture pieces. You  
can view your interior designs from 5 views.

#### Landscape

Create a full color plan of your property. Dozens of  
plants included. Create a top view and use the auto  
side view feature to view your plan from 4 sides.  
Includes slopes, scaling, and plant "aging", plant  
identification, and shopping lists!

#### Pricing

Macintosh	1 MB	\$99.95 ea
IBM	640K	99.95 ea
Apple II	64K	69.95 ea
Apple II GS	1 MB	89.95 ea



**Abracadabra**  
the source of plan-making software  
P.O. BOX 2440  
EUGENE, OR 97402

**TO ORDER CALL  
1-800-451-4871**

CIRCLE 530 ON READER SERVICE CARD

## Astrology

### MCHOROSCOPE

**Be your own astrologer,  
for fun or profit.**

Produce amazing astrological reports  
for friends and family. **\$199.50**

"McHoroScope" (Chart Interpreter) produces beautiful natal charts  
plus 15- to 17-page interpretations. Professional astrologers  
charge \$50.00 and more for similar reports. Excellent study guide  
for students and great fun for parties and get-togethers.

**Astrology for the Macintosh from Time Cycles Research®**

• Write or call for free brochure •

Time Cycles Research 27 Dimmock Rd Waterford, CT 06385  
(203) 444-6641 MC-Visa-Amex

CIRCLE 447 ON READER SERVICE CARD

## Bar Code

### Bar Code Fonts

**New!  
Version 3**

- ✓ Type 1 PostScript
- ✓ UPC/EAN Supplements
- ✓ UPC/EAN Bar-Width Reduction
- ✓ Font Utility DA

"This is the best product  
of its kind, and it's  
reasonably  
priced too!"  
MacUser, 6/90

• Code 39 • UPC/EAN • Interleaved 2 of 5 • PostNET  
prints on ImageWriter, LaserWriter, Imagesetters  
• Bar code readers starting at \$395.

Phone **916-622-4640**  
FAX **916-622-4775**

**Bear Rock**  
6069 Enterprise Drive • Diamond Springs, CA 95619

"Easy to use ... we love 'em!" - D.C.,  
Digital Audio Disc, Div. of Sony

CIRCLE 494 ON READER SERVICE CARD

## The Experts' Choice

FOR BAR CODE  
GENERATION

### MacBARCODA

- Generates bar codes in EPSF
- Compatible with all the popular  
page-makeup packages
- UPC, Code39, Interleaved 2of5,  
EAN, ISBN and ISSN
- All the vital features necessary  
for quality bar code production
- Full control over magnification,  
truncation and bar width reduction
- Automatic check digit verification
- No messing with fonts or film



0 12345-678-90 5

**Acknowledged as the  
best by imagesetter  
manufacturers and  
end users in 35  
countries of the world.**

**ComputaLabel**

ComputaLabel Inc., 28 Green St. Newbury MA 01951 Tel 800-289-0993 Fax 508-462-9198

FOR LABEL PRINTING



- Postscript label printing package
- Any label size & sheet layout
- Create labels using text, PICT &  
EPS graphics, bar codes and lines
- Incrementing bar codes & numbers
- Variable content and quantity
- Imports from ASCII text files
- Bar codes include UPC, Code128  
Code39, EAN, Postal Codes & ISBN

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## BAR CODE FONTS



- Generate film masters
- Runs on Dot Matrix, Laser, or Lino
- \$199.00 for Code 39 or UPC/EAN
- Bar Code Readers from \$399.00
- 30 day money back guarantee

**800-345-4220**

417 Ingalls Street • Santa Cruz, CA 95060

**WORTHINGTON**  
DATA SOLUTIONS

## Business

### Time-Master™

The Personal Productivity Tool with an Integrated Calendar, To-Do List and Phone Directory

Runs under HyperCard®, lets you take advantage of features without having to know HyperCard®!

Good way to learn HyperCard®!

Automated carry-forward of items!

Built-in "date-links" between Calendar and To-Do List!

Only \$19! To order contact:

Nantucket Group, Inc.

P.O. Box 442

Medfield, MA 02052

508/359-5940

The Macworld  
Catalog makes  
it easy to buy  
the products  
you need  
TODAY!

### MacOrg™

A revolutionary new organizational chart drawing program for the Macintosh Computer. Up to two staff positions are allowed. Boxes and lines may be black or three shades of gray. Choose any of six available background colors for each box. Pass the drawn chart to other applications via the clipboard. Free font selection is allowed.

The price is \$109. For more information call or write:

The Claybrook Company

P.O. Box 744182

Dallas, TX 75374

800/347-9440 214/341-9438

## CAD/CAM

**Professional CAD Symbol Library**

Over 3,000 CAD Symbols in One All-Inclusive Package

Architectural (Residential & Commercial), Interior Design & Site Planning, The "Plumbing & Heating Supply House", The "Hardware Store", The "Electronics Shack", Welding, General Drawing Aids, Cartographic, 180+ Page User's Manual, And Much More, All for \$149.95!

Compatible with  
Claris CAD™, MacDraw II™, PowerDraw™ and Canvas™

**Advanced System Design, Inc.**  
1010 Stagecoach Blvd., P.O. Box 3131  
Evergreen, Colorado 80439  
(303) 674-2222 to Order

(Specify Claris CAD, MacDraw II, PowerDraw or Canvas Version)

CIRCLE 408 ON READER SERVICE CARD

## Children's

### Enchanted Journey

Animated Software, Digitized Voice Creative, Musical, Games, Puzzles, Hidden Objects. Scenes include: Jungle/Outer space/Haunted House/City St./Underwater/Medieval Castle. Pure enchantment awaits with delightful scenes to play with and explore. Movable figures. Hours of fun. Ages 5-12 MacPlus/SE/II, 1 Meg. OS 6.0.2+ \$39.95 + \$3 S/H, MC/Visa.

Jumping Frog Productions

P.O. Box 218

Farmington, UT 84025

801/451-1517 800/523-3764

## Clip Art

Encapsulated PostScript®

**Full Page Images**

Natural Images Vol. 2 (NEW!) — \$129.95  
Use as backgrounds and settings to give a professional look to any page layout. Vol 1-111111

For Orders/Information Call (714) 881-1200 or:

**1-800-444-9392**

Artheats, Box 20083, San Bdo., CA 92406

**ARTBEATS**

CIRCLE 545 ON READER SERVICE CARD

## Logo SuperPower™

Logo SuperPower is a database of over 660 "design elements" that lets you combine one, two or more elements, change them in an infinite number of ways, and create outstanding logos and publication graphics. Logo SuperPower works in conjunction with: Aldus FreeHand & Adobe Illustrator. A PageMaker version called LogoPower is also available.

**Free Demo Disk:**  
**1-800-648-5646**

CIRCLE 533 ON READER SERVICE CARD

### Presentation Quality Clip Art

## MAPS!



World • Continents • Countries • USA by County  
EPS • PICT • MacPaint • For information call:

**800-334-4291**

MicroMaps Software • 9 Church St., PO Box 757 • Lambertville, NJ 08530  
Voice: 609-397-1611 • FAX: 609-397-5724

CIRCLE 417 ON READER SERVICE CARD

## CD Rom

**THE SANTA FE COLLECTION**

NATIVE AMERICAN & SOUTHWEST Images. Ancient to Modern Designs. Paint format. **500 ILLUSTRATIONS** and **140 BORDERS** on **3 DISKS!**

Includes Artisto+ DA. Prompt Delivery. Check, PO.

Orders & Information:  
(505) 982-1562

**1-800-245-7824**

**RT GRAPHICS** COMPUTER \$79.95

2257 Calle Cacique, Santa Fe, NM 87505

CIRCLE 458 ON READER SERVICE CARD

**Guaranteed Lowest Prices**

**CD-ROM Bundle:** Drive & 5 discs:  
NEC CD-ROM Drive • U.S. History on CD-ROM  
• Birds of America • Shakespeare • Sherlock Holmes • FM Waves Quality Artware \$499

**CD-ROM DRIVES (ready to run)**

- Complete CD-ROM drive kits from \$399
- CDT, Denon, Hitachi, NEC & Sony in-stock Col

**CD-ROM TITLES**

- CD Fun House Games, Games, Games! 34
- Spaceship Warlock Interactive CD "movie" 79
- Learn to Speak French: educational tool 149
- Type Gallery PS Adobe Postscript typefaces 243
- U.S. History on CD-ROM 107 books, 1,000 pics 395
- Countries of the World: text, images, sound 495
- Microsoft Office Word, Excel, Mail & PPoint 495

\*\*\*MORE! Over 300 different titles available\*\*\*

Money back guarantee • Free tech support

**Bureau of Electronic Publishing, Inc.**

Dept M, 141 New Rd., Parsippany, NJ 07054 Fax # 201-808-2676

**CALL: 800-828-4766** orders only  
(201) 808-2700 information

CIRCLE 420 ON READER SERVICE CARD

Continued...

For your ad to appear on The Macworld Catalog screen, call 800/888-8622.





# The Macworld Catalog

WE'LL MEET OR BEAT ANY ADVERTISED PRICE!



## MULTIMEDIA



**1566 Dictionary of the Living World.....\$295.00**  
A multimedia encyclopedia of the natural world with full motion video, color pictures and sound.



**1583 Spaceship Warlock ...\$89.95**  
"An epic Sci-Fi adventure!"  
Amazing 3D graphics.

**1381 Virtual Valerie...\$79.95**  
**1598 SuperStacks...\$15.00**

## EDUCATION

**1610 Classroom - NEW!.....\$49.95**  
Educational software for 8 yrs and under, 8 yrs to 12 yrs, and 12 yrs through high-school and college.  
**1613 Study Room - NEW!.....\$29.95**  
Educational: 12 yrs thru high-school and college.  
**1612 R<sup>2</sup> - NEW! Educational: 8 yrs to 12 yrs...\$29.95**  
**1614 Kids Room - NEW! Edu: 8 yrs and under \$29.95**  
**1601 PMED Discovery.....\$149.00**  
**S1358 Lingua-ROM - 50% off for limited time \$250.00**  
Speak French, Spanish, German, Russian, Japanese, Italian, and Chinese. 25 of HyperGlot's language tutors with sound.

**50% OFF!**

## EDUCORP THE FIRST AND BEST NAME IN CD-ROM 1-800-843-9497

CALL FOR A FREE CATALOG! ■ 7434 Trade Street ■ San Diego, CA 92121 ■ Orders: 1-800-843-9497 ■ Info: 1-619-536-9999 ■ FAX: 1-619-536-2345

## CD-ROM DRIVES

All drives come with driver software and cables (specify #982 SCSI to SCSI or #981 Mac to SCSI Cable).

**1391 Toshiba XM-3201.....\$699.00**  
350 millisecc. / 64K buffer  
**1981 CD-Tech. Porta Drive.....\$599.00**  
350 millisecc. / 64K buffer

**1352 Pioneer 6 Disc.....\$1395.00**  
800 millisecc.  
**1973 NEC CDR-35.....\$499.00**  
1500 millisecc.  
**1972 NEC CDR-72.....\$649.00**  
350 millisecc. / 64K buffer

## DRIVE SPECIALS

**\$50 off the EDUCORP CD-ROM 5.0 with purchase of any drive!**  
**1931 Chinon CDA-431.....\$579.00**  
350 millisecc. / 32K buffer. Bundled with the EDUCORP CD-ROM 2.0.

**P1317 Denon DRD-253.....\$599.00**  
Shakespeare, Sherlock Holmes, Audubon, and GameRoom are bundled **FREE** w/purchase! 400 millisecc. / 32K buffer.

CIRCLE 481 ON READER SERVICE CARD

## DTP



**\$1581 International Graphics Library.....\$149.00**  
Over 200 business oriented 24-bit color and grayscale TIFFs created by Emmy award-winning designers.

**50% OFF!**

**1585 Ocean Imagery.....\$99.00**  
Over 100 scanned photos covering water sports, scenic ocean views and landscape panoramas. 24-bit color & grayscale.

**1330 Clip Art.....\$59.95**  
**1389 Desktop Publishing.....\$79.95**  
**1359 Sports-ROM.....\$69.95**

## MISC.

**1300 EDUCORP CD-ROM 5.0.....\$199.00**  
**\$50 off** with the purchase of any CD-ROM drive! A 2-CD set, over 700 meg of the finest Shareware. Upgrades available.

**1582 Sound/FX - over 240 sound effects.....\$199.00**  
**1611 GameRoom - over 750 games.....\$49.95**  
**1327 Exotica ROM 2.0.....\$199.00**  
**1587 The Donatelli Portfolios:Lingerie.....\$99.00**  
100 photos of 20 models in color and grayscale.

**OVER 150 CD-ROMS IN STOCK!**

CIRCLE 478 ON READER SERVICE CARD



## NEW! sound fx CD

Expertly recorded and mixed. Over 225 high-quality digitized sounds in 8-bit mono and full 16-bit stereo. The tremendous diversity in styles and moods is exactly what you need for your programming and multimedia projects. Sounds are divided into 13 categories ranging from On the Farm to At the Office. Put the power of a recording studio at your fingertips! #1582, \$199.00

**#962 CD-20 Disc Case \$9.95**

Durable plastic case with lid. Hold 20 CDs in jewel cases. Great for audio CDs, too.

**1593 Pack of 5 CD Caddies.....\$39.95**  
Buy 10 Caddies for only \$55

## Data Base

### Complete database contracting services:

Design ■ Development  
Installation ■ User Training  
Maintenance

Fortune 100 Customers

## Custom Databases

**db Vista  
Inside/Out  
4th Dimension  
Foxbase**

Call for project  
estimating guide.

## Armstrong & Yawney

Phone: 800-359-0898 ■ Fax: 415-944-4708 ■ Applelink: D1792 ■ CompuServe: 76527,507

Apple Certified Apple Developer Apple VAR

CIRCLE 491 ON READER SERVICE CARD

## Educational

### THE ABSOLUTE BEST IN TESTING!

**LXR-TEST™ 4.1** is the most advanced and complete testing system available for your Mac!  
• Item banking  
• Test generation  
• Scoring & analysis  
• Paper & interactive  
• Mark reader support  
• Commercial banks

• Character styling w/tabs  
• Full graphic placement  
• Database selection  
• Compatible gradebooks  
• Student mastery  
• Spelling checker

Highest rated software available in various editions to match your testing needs. Fully guaranteed! Pricing from \$149. For complete brochure & free preview disk; call, write, or fax:

**Logic eXtension Resources**  
9651-C Business Center Drive  
Rancho Cucamonga, CA 91730  
(714) 980-0046 Fax: (714) 987-8706

CIRCLE 407 ON READER SERVICE CARD

### MakeTest®

"provides the best way I have seen to store and categorize test questions." *Macworld 9/90*

Easy-to-use test software. Store questions. Print tests and answer keys quickly. Include graphics, equations. Hand-pick or randomly select questions.

### MathMaker Fonts

Easily enter fractions, roots, matrices, summations, number lines and grids as text! Works with all Macintosh-compatible printers and ATM.



800-669-6574 or 415-752-6515 • 298 4th Avenue #401, San Francisco, CA 94118

### EPS Teacher's Assistant

"is a lush set of HyperCard stacks that can lighten the teacher's administrative duties...it runs like a dream." *Macworld 9/90*  
Enter grades, attendance and lesson plans; manage calendars and To Do lists; print reports, eligibility lists.

### LanguageLab™

Thinking about a trip to Europe or Japan? Wish you had time to learn a new language? Now you do. LanguageLab gives you words & phrases spoken by native speakers in clear, digital sound - on your Mac. Easy to use. No tapes needed. Finally a method that Works-Fast! Make the most of your business trip or vacation. Why wait? Write or call for free brochure. Guaranteed results!

**Accent Systems**  
555 Bryant St. #106  
Palo Alto, CA 94301  
415/964-6646

### The Macintosh Educational Software Collection

Courseware, commercial products and public domain software.

**Good Prices - Great Selection!**  
**Send for a FREE catalog**

**CHARIOT • 3659 India St.  
Suite 100 • San Diego, CA 92103  
(619)298-0202**

CIRCLE 500 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## Macの日本語は クオリタスにお任せください。 Qualitas Trading is your Japanese Resource!

We offer a full line of Japanese-language products for your Mac or IBM computer, as well as technical support, training, and Japanese PostScript™ print-out service. We'll help you choose the best Japanese software solution for your specific needs.

### New Products for the Mac!

#### The Translator

The first of its kind! An English-to-Japanese translation program that can translate up to 20,000 words per hour.

#### Kojien Dictionary on CD

The prestigious Kojien dictionary, with sound and graphics, is finally available on Macintosh CD for easy reference.

We stock many Japanese word processors, DTP programs and other Japanese-related software. Write, call or fax for our new catalog.



### Qualitas Trading Company

6907 Norfolk Rd., Berkeley, CA 94705  
Phone: 415-848-8080 / Fax: 415-848-8009

CIRCLE 436 ON READER SERVICE CARD

#### Teacher's Rollbook

A complete classroom management tool! Grade averaging and reporting. New quick grade entry • Full attendance records and totals • Records disciplinary actions • Class size reports • Up to 315 students per file • Remember birthdays & checked out items • Letters to parents • Min. req. Mac 512KE, 2 drives • \$99 Demo \$10.

Current Class Productions  
22824 Berendo Ave.  
Torrance, CA 90502  
213/326-4246

#### Grade Machine Version 4

Gives you FAST full-screen editing of grades, weighted assignments and categories. Style sheets help customize reports. Each class file holds 250 students, 250 assignments, and 10 grading periods. Money-back guarantee. NOT copy-protected. Only \$74.95 + \$3.50S&H. Mention this ad and SAVE \$10!

Reviewed 9/90 Macworld (Pg. 287)  
Misty City Software  
10921 129th Place N.E.  
Kirkland, WA 98033  
206/828-3107

### rSTONE

An English-Japanese Dictionary Desk Accessory. Increase your productivity; stop searching for your pocket dictionary.

### JapanEase

#### Vol. 1: Katakana

An interactive, exciting way to learn katakana, gairaigo words and basic grammar. Includes a Japanese Business Card Maker and a book on Japanese culture.

## Engineering

### DesignWorks 2.5™

Fully integrated and fully functional schematic and simulation on the Macintosh, featuring:

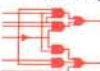
- integrated device symbol editor creates new symbols in seconds!
- advanced schematic editing features such as rotation, attributes, bussing, multipages, rubberbanding, Cut/Paste
- fully interactive digital simulation with logic-analyzer style timing display
- netlist support for SPICE, EDIF, PCad, OrCad, Douglas, Cadnetix, Redac, etc.
- full 7400, 4000, LSI, analog libraries

### MacABEL 1.0™

Data I/O's industry-standard PLD design package is now available on the Macintosh, with enhanced design and simulation features:

- support for devices from Altera, AMD, Atmel, Cypress, Fairchild, Gould, Harris, IDT, Intel, Lattice, National, Ricoh, SGS, Signetics, SSS, TI, VTI and others.
- interactive, "in-circuit" simulation support when used with DesignWorks.

DesignWorks: \$995 MacABEL: \$2350  
Call for your free demo kit today!



Capilano Computing  
545-108th NE, Suite 6  
Bellevue WA 98004  
(604) 669-6343

CIRCLE 498 ON READER SERVICE CARD

## CIVIL, STRUCTURAL SURVEYING, DEED PLOTTING

### LANDesign™

- COGO/Surveying
- Graphics always visible
- Import/export data
- Deed plot, map check
- Radial stakeout
- Intersections
- Traverse adjustments
- US\$595 plus shipping

### FRAME mac™

- Structural Analysis
- Frames, trusses, beams
- Enter data graphically or numerically
- Full graphics for structure, loads, axial, shear, moment, deflection
- US\$595 plus shipping

### Other programs available for:

- Deed plotting
- Road design
- Contour mapping
- Terrain modelling
- Earthwork calculations
- Estimating
- Detention pond design
- Digitalizer input
- Plotting
- Structural design of steel, wood, concrete
- Beam sizing
- Structural properties
- Section tables AISC, CISC
- Aggregate blending
- Unit conversions

For free catalog or info, call or write:  
**COMPUnEering (416) 738-4601**

113 McCabe Crescent  
Thornhill, Ontario L4J 2S6  
CANADA

CIRCLE 503 ON READER SERVICE CARD

## Entertainment



Toyogo, Inc.  
(800) TOYOGO - 9

### Go - meet your NEMESIS™

Go has been a way of life in the Orient for over 4,000 years. As much a philosophy as it is a game, Go is considered by many to be the secret of Japanese success. "the leading Go game for the Macintosh... Using it is an improvement over learning the game from books or from all but the most patient humans." "This is without question one of the most extraordinary automated aids to go instruction developed." MacWorld 6/89

P. O. Box 25460-C, Honolulu, HI 96825-0460 (808) 396-5526

CIRCLE 440 ON READER SERVICE CARD

As seen in PLAYBOY  
"MacAdam and Eve"

The humorous & bawdy animated program for SEs and Mac IIs. Complete with sound effects. To be used as clip art or animation with select programs. Buyers state age over 21. \$29.95 b/w or \$39.95 color plus \$3 S/H - CA add 7% sales tax. Visa/Mastercard accepted.

Desktop Video Productions, Inc.

100 Broadway, Suite #292

Oakland, CA 94607

415/763-6243 415/465-7458 Fax

## Fonts

## PostScript® Font Software

SAVE UP TO 38% OFF LIST PRICE

Authorized Dealer For:

Adobe	Kingsley ATF
Bear Rock	Letraset
Bitstream	Linotype
Casady & Greene	Monotype
Compugraphic	OptiFont
Image Club	The Font Co.

Digitizing of Exclusive Corporate Fonts

# 1-800-248-FONT

PRECISION TYPE 1-800-248-3668 516-543-3636  
47 MALL DRIVE, COMMACK, NEW YORK 11725  
\*PostScript is a registered trademark of Adobe Systems Inc.

CIRCLE 485 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

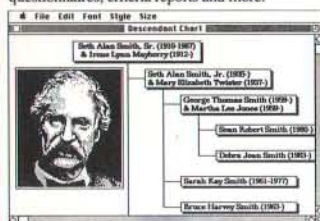
## Genealogy

### REUNION

the family tree software

MacUser Oct '90

Reunion quickly records, links, and displays family information and images. Create large, graphic charts, family group records, family histories, indexes, mailing lists, birthday calendars, questionnaires, criteria reports and more.



Call, write, or FAX for brochure & sample printouts.

**LEISTER PRODUCTIONS**  
14 Hill Blvd., Mechanicsburg, PA 17055  
717-697-1378 — FAX 717-697-4373

### MacGene™ Version 4.0

"Genealogy Research Made Easy"

Automate your family album with treecharts, statistics, histogram, folklore... Define your own fields, searches, reports, mailer, etc. Features: Auto link/generation, external files, Publish Ready, plus more... the FASTEST...

• NOT HyperCard • NOT IBM Port  
• \$145 Visa/MBG • Demo \$25

*Applied Ideas Inc.*

P.O. Box 3225

Manhattan Beach, CA 90266

Order/Free Info: 213/545-2996

### Family Heritage File™

Most powerful and easy genealogy program on Mac. Rated "BEST" by Macworld. Designed by genealogy professionals. New Jewish version.

• Enhanced • Fully relational • Graphic Pedigree, Family Group, Individual, Marriage, Surname • Unlimited History • Sorted Lists • Export to WP/data base/modem. \$149 + \$5 s/h. Demo \$7. Visa/MC. Free Lit Pak.

*Star-Com Microsystems*

Windsor Park East

25 West 1480 North

Orem, UT 84057

801/225-1480

### Family Roots™

Do it YOUR way! Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indices and much more. Customize to your own preferences. Standard Mac interface. Call for FREE information.

Satisfaction guaranteed MC/Visa/AE.

*Quincept*

Box 216

Lexington MA 02173

617/641-2930, 800/637-ROOT

## Graphics

### Paint at That - New Product

- 32-bit full color and Quick Draw compatible with 1.67 million colors
- Special effects and features - flip, free rotate, skew, stretch, bend, label and more with selected color and area editing
- Color brightness and transparency control
- Multiple window function
- Can create your own color palette
- Bolt On Tool through interface spec and source codes provided for you to create the tool
- Prints on Mac compatible printers include many color printers and LaserWriter

**All these for only \$99.95**

Published by Threes Company, Inc., Tokyo, Japan (a major developer, distributor, & dealer for Mac)

Distributed by **Soft World Corp.**

1315 Lori Ln. Rosemead, CA 91770

Tel (818) 288-4287 Fax (818) 280-3945

**Dealer inquiries are welcome**

CIRCLE 525 ON READER SERVICE CARD

## HyperCard Stacks

### Wild Things™

The easy way to learn XCMDs. Wild Things provides all the tools you need to get started writing your own XCMDs in C, Pascal or FORTRAN.

- Source code for 40 XCMDs
- Utility routines and templates
- Simple stacks
- Full-featured icon editor
- No license fees

*Language Systems Corp.*

441 Carlisle Drive

Herndon, VA 22070

703/478-0181

Fax 703/689-9593

## Expand your vocabulary in: CZECH FRENCH SPANISH GERMAN RUSSIAN LATIN

Over 2000 words/1000 foreign synonyms. Complete, accurate translations and thousands of English synonyms! MacFlash Cards get you to the intermediate vocabulary level FAST. Compare our prices and SAVE! German I/II, French I/II, Spanish I/II, Russian I/II, Czech I, Latin I: \$25 each. S&H \$4.50, CAL Res add 7% tax. Call or send for additional information. Order today. Call **800-622-3574 (MAC-FLSH)**

The Language Quest Software Company  
101 First Street, Suite 428, Los Altos, CA 94022

Same Day Shipping  
2 Days to your door!

CIRCLE 451 ON READER SERVICE CARD

## Import/Export

### INTERNATIONAL EXPORT/SALES

SPECIALISTS IN MAC. SOFTWARE & HARDWARE

Reliable Engineers

Fast and Professional Service

Agent/Representative Service Available

### PACIFIC DEMAND INC.

533 Howard St. S.E. CA 94105

TEL:(415) 512-7790 FAX:(415) 512-9345

CIRCLE 540 ON READER SERVICE CARD

## Languages

### FORTRAN on Your Desktop

No need to wait for time on the "big" computer any longer. Language System FORTRAN lets you run the same high performance FORTRAN programs at your desk. VAX-compatible extensions, high precision IEEE floating point data types, built-in user interface, background execution and direct code generation for MAC II family make this compiler the most powerful FORTRAN for the Mac.

*Language Systems Corp.*

411 Carlisle Drive

Herndon, VA 22070

703/478-0181

Fax 703/689-9593

### MACTRAN PLUS Ver. 4.0

Integrated Made-for-Mac Development System. Includes: Editor, Optimizing Compiler, Source level Debugger, Linker, Library Manager, Profiler and Build facility. Supports 68020/030 & 68881/2 native code. Significant Vax Fortran & ANSI 8x extensions. High & Low level tool box interface. Unlimited code segment size.

*DCM Data Products,*

610 One Tandy Center

Fort Worth, TX 76102

817/870-2202

Fax 817/336-2416

"I saw it in  
Macworld!"

## Lottery

MacLotto®  
All Lottos, All Kenos, All Mac's  
Dramatic Odds Improvements!!!  
Increases Your Expected Return  
Jackpot Wagering Strategizer™!  
Respects YOUR Budget!!  
On Screen Bet Slip Graphics!  
Fast, Accurate Bet Placement!  
Finds and Pinpoints all Winners!  
Based on OUR Patent #4,712,796

**\$115.5 Million Dollar Lotto JACKPOT was CRACKED!!**  
Using Odds Improvement Multiplication™

• Penna. Doctor Wins \$8.2 Million Dollars  
• California Engineer Wins \$195,821.00!  
• Canadian Woman Hits BIG in Lotto 6/49  
• Michigan Judge Hits 5/6 for \$2,500.00 !!  
\$99 US Math Labs, 18 Main St Concord, MA 01742  
FAX 508-653-9193 Direct 617-431-5922  
MC/VISA 800-PLAY-SIX

CIRCLE 418 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## Medical

### MediSearch™

Communications/research software to access NLM's MEDLINE direct with a powerful, friendly Mac interface. Saves time and money. Easy to learn features for both new and sophisticated Medline users. Formats retrieved information for Word processor, EndNote™, and FileMaker™. Comprehensive manual. Satisfaction guaranteed. \$149 ppd in US. PO/MC/VISA.  
Boestring Solutions  
402 Cortland Ave.  
San Francisco, CA 94110  
800/333-9462

### MacAnatomy™/MacSurgery™

...an electronic atlas of Anatomy in 4 vol. on disk in MacPaint™ format. Easily altered & copied to any program via the clipboard. Ideal for students of Anatomy in all the health & legal professions.  
...is a HyperCard™ stack with multiple-choice questions & answers. Detailed discussions & documentations are provided. Ideal for continuing education & board preparation.

### MacMedic Publications


7530 Harwin  
Houston, Texas 77036  
713/977-2655 800/477-0717

### Medical Office Mgmt.

TessSystem™ software for insurance and billing. Our \$1295 package outperforms software selling at three times that price. Expandable line to grow with your needs. Call for product literature and DEMO software today! New modules include electronic claims and multi-user for Mac networks.  
Wabash Medical Resources, Inc.  
6865 Parkdale Pl., Suite A  
Indianapolis, IN 46254  
317-299-7800

## Multimedia

The Ultimate Clip Animation For The Macintosh



A Collection of Animated:

- Titles
- Charts
- Transitions

Is Perfect For:

- Graphic Artists
- Business Professionals
- Multimedia/Video Artists

Call For A Demo And Experience The MAGIC!  
800 • 367 • 6240  
4521 55TH ST. SUITE 15 SAN DIEGO, CA 92115

CIRCLE 536 ON READER SERVICE CARD

## Music/MIDI

**Adventures in MUSICLAND™**



Based on Alice in Wonderland, Adventures is a unique and delightful collection of 4 musical games and puzzles for children of all ages and abilities! You don't need to be a musician, but as you play, your understanding of sounds, tones, musical symbols, and composers will develop. Adventures in Musicland entertains, makes you smile, and teaches you about music.

Dr. T's  
Music Software  
100 Crescent Rd.  
Needham, MA 02194  
(617) 455-1454  
Only \$79

CIRCLE 535 ON READER SERVICE CARD

CALL NOW!...Special Pricing on Digidesign, Coda, Dr. T's, Mark of the Unicorn, Opcode, Passport, Roland Instruments, & more... FREE CATALOG!

**1-800-MAC-BEAT**  
1-505-988-1710



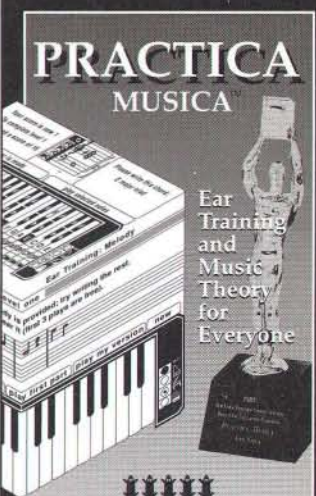
CIRCLE 433 ON READER SERVICE CARD

Reach your audience  
when it counts.

Catalog readers are  
ready to buy!

VERSION 2.2

## PRACTICA MUSICA



Ear Training and Music Theory for Everyone

-MacUser Magazine, August 1990

- Teaches intervals, chords, melody, rhythm
- Interactive staff notation • Saves scores
- High quality sound • MIDI compatible
- Historical & computer-generated melodies
- Custom ear training melodies
- Includes textbook • Beginners to advanced

\$125.00 • Call Toll Free 800-445-4866

ARS NOVA  
BOX 637, KIRKLAND, WA 98083

CIRCLE 489 ON READER SERVICE CARD

## Nutrition

### Improve Your Nutrition

MacDINE II takes the guesswork out of good nutrition for improved health.

- Finds foods with selected amounts of nutrients for meal planning, cholesterol lowering, and weight reduction.
- Analyzes your meals, snacks, recipes, and physical activity.
- 5656 foods, expandable database with 24 nutrients, 194 activities.
- Demo \$10 - credit toward purchase.

DINE Systems, Inc.

586 North French Road, Suite 2  
Amherst, New York 14228  
716/688-2492 FAX 688-2505

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## Programming Tools

NEW!!

68000, COP800, PIC16Cxx  
versions!

**µASM™** Cross Assemblers  
for the Macintosh™

\*TEXT EDITOR, CROSS MACRO ASSEMBLER, AND  
COMMUNICATIONS FACILITY IN A COMPLETE  
INTEGRATED DEVELOPMENT ENVIRONMENT  
\*S OR HEX FILE OUTPUT DOWNLOADS  
TO MOST EPROM PROGRAMMERS

**\$149.95 ea**  
plus S/H\*

AVAILABLE FOR MOST 8-BIT MICROPROCESSORS AND  
68000/010. CALL OR WRITE FOR TECHNICAL BULLETIN.  
30 DAY MONEY BACK GUARANTEE. MC/V/AE.

**Micro Dialects, Inc**  
DEPT. MW, PO BOX 30014  
CINCINNATI, OH 45230  
(513) 271-9100

CIRCLE 416 ON READER SERVICE CARD

## Public Domain

### THE PUBLIC DOMAIN

The best in software  
at the lowest prices.  
Anywhere.

CATALOG AND SOFTWARE \$2

**id**OMAIN  
PUBLIC

675 CHURCH RD

VILLANOVA, PA

19085

CIRCLE 534 ON READER SERVICE CARD

**SOFTSHOPPE, INC.**  
ASP Member

- ✓ Selected Programs
- ✓ Latest Versions
- ✓ As Low as \$2.50

**FREE CATALOG**  
**MAC PD/SHAREWARE**

POB 3678, Ann Arbor, MI 48106

Call 800-829-BEST (2378)  
or 313-761-7638  
Fax 313-761-7639

CIRCLE 429 ON READER SERVICE CARD

**FREE - 6 DISKS FULL OF SOFTWARE**  
**TRY US!** Get our best selling NO VIRUS software  
for **MACINTOSH® COMPUTERS**. Business for  
home and office, Desktop publishing, Utilities,  
Games, Finance & Education. Credit cards only!  
**PAY ONLY \$5.00 SHIPPING/HANDLING**  
**SATISFACTION GUARANTEED**  
**SMC SOFTWARE PUBLISHERS**  
**619 931-8111**

CIRCLE 486 ON READER SERVICE CARD

## real estate software

### ■ Real Estate Edge 2.0 \$395

A client prospecting system for real estate  
salespeople interested in generating more  
listings by easily creating mass mailings.

- phone dialer
- reminders
- importing
- letters
- envelopes
- labels

DEMOS NOW AVAILABLE!

**Metropolis**  
Software

505 Hamilton Ave., Suite 505  
Palo Alto, CA 94301  
phone: (415) 322-2001  
fax: (415) 327-5579

CIRCLE 415 ON READER SERVICE CARD

## Property Management

Comprehensive software for managing  
residential, commercial properties and  
condo associations. Includes check  
writing, recurring expenses, financial  
statements, complete management  
reporting and a full general ledger for  
\$1,195.

*Yardi Systems, Inc.*  
813 Reddick St.  
Santa Barbara, CA 93103  
805/966-3666

## Real Estate

### NEW! Real Estate Investment, Version 7.0

The best is now even better. Are you trying to make a decision to  
buy or sell a piece of income property — or perhaps trying to arrange  
the financing needed to purchase? *Real Estate Investment Analysis*,  
the industry standard since 1982, will make your job easy. Analyze  
income, expenses, cash flows, financing, rates of return, tax impli-  
cations and much more. Then use 7.0's new *Real Estate Business*  
*Plan* to create a professional, presentation-quality report for your  
client, lender — or yourself. Requires Microsoft Excel. **just \$295**

For those properties you already own or manage, you need *Property*  
*Management III*, a comprehensive management and accounting sys-  
tem. *PM III* offers integrated AR, AP and GL, maintenance tracking,  
lease abstracting, and extensive management and financial reporting.  
Available in four levels, handling from 50 units to unlimited, priced  
from \$395 to \$1495. **Fully functional evaluation copy, \$45 (+s/h)**

**REALDATA®**  
78 North Main St., South Norwalk, CT 06854

ORDERS ONLY 1-800-899-6060  
INFO (203) 838-2670  
FAX (203) 852-9083

CIRCLE 422 ON READER SERVICE CARD

## Religion

**Church Data Master Plus**  
for comprehensive data management  
for churches of all sizes.

Membership - \$265.  
Contributions - \$265.  
Accounting - \$265.  
Integrated Package - \$795.  
Multi User (3) \$995.  
Multi User (4-10) \$1,395.  
Full working demo send \$10.  
*Computer Helper Publishing*  
5898 Cleveland Avenue  
Columbus, OH 43231  
1-800-533-5227

**You Can Access  
More than  
385,000  
Macintosh Buyers**

*The Macworld  
Catalog* reaches the  
experienced users  
who know what  
they want, want it  
fast, and look for it  
here—each and  
every month.

The most readers.  
The least cost.  
Immediate access.  
Just call *The  
Macworld Catalog*  
and place your  
ad—today!

**800/888-8622**

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## 10th Anniversary Celebration!

Ten years at the top! Version 5.0 VERSE SEARCH now offers full mouse support, unlimited windows and instant access to every word or verse. Our family of Bible study products includes: NIV, RSV, KJV or NKJV text, Bible Concordance, Bible Dictionary, Thesaurus, Chain References, Personal Commentary, Greek / Hebrew transliterators, Topical Bible, Chronological Bible. Memory resident. VERSE TYPIST transfers verses directly to your word processor. Our \$5 demo disk shows why we have sold more products than any other Bible program!

**Bible Research Systems • 800-423-1228**

2013 Wells Branch Parkway #304 • Austin, Texas 78728

Tech Support (512)251-7541

Call for a free Catalog.

Satisfaction Guaranteed.

CIRCLE 495 ON READER SERVICE CARD

## Restaurant

### Complete Restaurant Solutions!

#### RMS Plus™

back-office accounting  
\$995-\$1,995



#### Touch'n GO!™

touch-screen P.O.S.  
From \$995 per terminal

Standalone Payroll - \$395

**Sextant Corporation**

**800-262-6665 • 813-954-5622**

1501 Laurel Street • Sarasota, FL 34236

CIRCLE 492 ON READER SERVICE CARD

## Questions?

Use the Reader Service Card to request free information about the products you see in *The Macworld Catalog*.

## Sales/Marketing

### Market Master for Mac

MacGuide calls it "the Best Sales lead follow-up you can buy." Enter leads whenever you get them & MarketMaster™ contacts the right people the right way at the right time. Prints letters, envelopes, phone lists, scripts, & NEVER FORGETS! Easy to learn & use. Frees salespeople to SELL & supports them to SELL MORE! Demo Disk \$10

Breakthrough Productions

210 Park Avenue

Nevada City, CA 95959

916/265-0911

## Statistics

### CLR ANOVA 2.0

Analysis of variance program that can compute up to a 10-way design with repeated measures and unequal n. Marginal means, plots of interactions, simple effects, range tests, contrasts, and more. Full Mac interface. Widely acclaimed & extremely easy to use \$125+ \$3 s/h. \$6 s/h foreign.

Clear Lake Research

2476 Bolsover #343

Houston, TX 77005

713/242-3494

### MINITAB on the Mac

Flexibility and a powerful range of statistical functions — master basic as well as advanced capabilities — within one hour.

- Regression • Time Series
- ANOVA • Hi-Res Graphics
- ANCOVA • Macro Capabilities
- ...and more

Now available for Mac II, Plus & SE

**CALL 800-448-3555**

**MINITAB**  
STATISTICAL SOFTWARE

3081 Enterprise Drive / State College, PA 16801

CIRCLE 450 ON READER SERVICE CARD

## Scientific

### Geological Software

Great graphics, low prices! • Lithologic log plotting • Gridding • Contouring • Piper/Stiff plots • Oil & Gas economics • Stereonet plots • Plate tectonics • Geophysical modelling, +much more for the Macintosh & PC \$50-\$1500. Call or write for FREE catalog of easy-to-use software products.

RockWare Inc.

4251 Kipling, Suite 595

Wheat Ridge, CO 80033

303/423-5645

303/423-6171 FAX

## Training

### 3D Surface & Mapping Software for your Mac

- 5 types of 3D Surface plot.
- Contour, dot-density, point location, shadowgram maps.
- Area/volume calculations.
- Extensive grid/grid-to-grid data manipulation.
- Trend surfaces, filtering.
- World maps to 12 different projections.

#### WTC Scientific

152 Buxton Road

Macclesfield

Cheshire SK10 1NG UK

Phone +44 625 420210

CIRCLE 532 ON READER SERVICE CARD

**TRAINING**

Master the basics of Photoshop with an easy and powerful self-paced audio tutorial.

TEACH YOURSELF PHOTOSHOP

**PHOTOSHOP BASICS**

\$ 79.95 + shipping

Call or Fax 408.358.7793

Includes 5 photographic images on diskettes, cassette tape, Quick Card & Visual Tour. All trademarks rights acknowledged.

CIRCLE 514 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## Services

### Computer Insurance

#### COMPUTERINSURANCE PLUS

- Replacement with no depreciation
- Covers computer hardware in home or office
- Easy to read policy
- Bonus 20% for software coverage
- Low \$50 deductible
- Covers theft, fire, power surges, accidents, natural disasters, even earthquakes and flood
- Policy backed by an A+ company

THE COMPUTERINSURANCE AGENCY, INC.  
6150 Old Millersport Road, NE  
Pleasantville, OH 43148

1-800-722-0385

CIRCLE 523 ON READER SERVICE CARD

#### 800K/1.44 FLOPPY DRIVES GENUINE SONY REPLACEMENT \$199

INSTALLED  
REC. LIST \$450

#### MAC+/SE POWER SUPPLY

NOW ONLY  
\$188

INCLUDES  
ONE YEAR  
WARRANTY

#### 2.5 MB MEMORY

INSTALLED  
ONLY

\$99

WITH  
ABOVE REPAIRS

FAST  
NEXT DAY  
SERVICE



We're  
Mac specialists  
dedicated to Mac  
Users. Call Today  
for estimates on  
other repairs!

CALL NOW  
TOLL FREE  
800  
622-8804

CIRCLE 487 ON READER SERVICE CARD

## Desktop Publishing

### COLOUR POSTERS

- PC Mac Unix etc.
- Postscript formats
- Most vector & raster
- 42 in. X 12 ft., 400 dpi
- 24 hr, 19.2k Baud BBS
- Large illustrations
- Large renderings
- Courtroom displays
- Signage, Murals
- Architectural

#### digital prism inc.

636 El Camino Real  
San Carlos, CA 94070  
(415) 508-8800

CIRCLE 465 ON READER SERVICE CARD

#### HIGH QUALITY SLIDES FROM YOUR MAC

• OVERNIGHT SERVICE •



#### PERSUASION POWERPOINT CRICKET

1-800-940-CLIK  
5205 NW 33RD AVE.  
FT. LAUDERDALE, FL 33309

CIRCLE 511 ON READER SERVICE CARD



#### SOFTWARE INSURES YOUR COMPUTERS

Full replacement of hardware, media, purchased software. As low as \$49 yearly. Covers fire, theft, power surges, other accidents. Blanket coverage; no list of equipment needed. Call for information or immediate coverage.

1-800-848-3469  
Local (614) 262-0559

SAFEWARE, The Insurance Agency Inc.  
2929 N. High Street, P.O. Box 02211  
Columbus, OH 43202

CIRCLE 522 ON READER SERVICE CARD

## Data Conversion

#### TAPE/DISK CONVERSIONS



- Conversion services to or from  
over 2700 computer systems:
- Magtapes • Mini Computers
  - Micro Computers • Typesetters
  - Word Processors

CALL THE INDUSTRY LEADERS

PIVAR  
COMPUTING SERVICES, inc.

800-CONVERT  
708/459-6010  
165 Arlington Heights Rd #MC  
Buffalo Grove, IL 60089

Nextwave  
Productions  
NYC, NY

In NY State Call:  
212.989.2727

Outside NY State Call:  
800.445.9002

**\$10 PostScript®  
Slides** (24 hr service)

\$5 Non-PostScript imaging  
& volume discounts available

CIRCLE 488 ON READER SERVICE CARD

**SLIDES  
& OVERHEADS  
BEST PRICES**

\$3 PICT, \$5 Postscript®, photo-  
graphic color overheads & prints  
all Mac programs and fonts.

*Elegant Graphic Slide Service*

(707) 795-3272 or  
(612) 941-8277

CIRCLE 527 ON READER SERVICE CARD

## Computer Repair

### MAC REPAIR

Mac Shop Northwest

- Apple™ Certified Technicians
- One-Day Service Turnaround\*
- Hard Disk Repair & Data Recovery
- Up to 75% below Dealer Rates
- Component-Level Repairs
- Expert Advice and Prices by Phone
- Power Supplies & Logic Boards
- Lifetime Repair Warranty\*

\*on many repairs. Visa/MC/AX. Fast overnight shipping available. We use genuine Apple™ parts.

1-800-MAC-SHOP

CIRCLE 515 ON READER SERVICE CARD

WE CAN CONVERT DATAFILES  
TO/FROM OVER 1,500+ SYSTEMS  
IN VIRTUALLY ANY FORMAT!  
— ON DISKS OR TAPES!

#### Systems like:

- Mainframes
- Minis
- Microcomputers
- Dedicated Word Processors
- Typesetters, etc.

#### Formats like:

- MacWrite\*
- Microsoft Word\*/Works\*
- WordPerfect\*
- Omnis\*
- 4th Dimension\*
- FileMaker\*
- Jazz\*
- Excel\*
- Tab-delimited ASCII, etc.

\*Trademarks of their respective companies

CompuData Translators, Inc.

3325 Wilshire Blvd. Ste. 1202  
Los Angeles, CA 90010  
800/825-8251 • 213/387-4477

CIRCLE 502 ON READER SERVICE CARD

**HELL YES!**

- PostScript® to Hell Color Scanning
- Commercial Quality Color & DTP
- 1200 & 2400 dpi PS Imagesetting
- Full Color Electronic Pre-Press
- Color PostScript 300 dpi Printing
- We Cater to In-House/Ad Agencies

24-HOUR  
BBS/FAX

**ImageSet**

Service Bureau • Pre-Press Centers

Ann Arbor, MI 313/971-7030

Troy, Michigan 313/589-7784

CIRCLE 437 ON READER SERVICE CARD

**I M A G I N G**

We can image your Macintosh  
files from Color Studio®,  
Photoshop®, Illustrator®, Power  
Point®, Persuasion®, etc.

**Film Recorders**  
Solitaire: 35mm or 4x5 (4K or 8K)  
M.D.A.: 8x10 (continuous tone)

24 Hr Service available  
Call John or Lisa for information  
213-386-7901

**GP Color**  
201 So. Oxford Ave. L.A., CA 9000

CIRCLE 537 ON READER SERVICE CARD

For your ad to appear on The Macworld Catalog screen, call 800/888-8622.



# The Macworld Catalog



## Disk Duplication

**For Expert 24 Hour  
Software Duplication  
Call 800-533-4188**

- ◆ 100% Satisfaction Guaranteed
- ◆ Superb Six Step QC Process
- ◆ Turnkey Printing, Packaging & Assembly Service Provided

**EGHO**  
DATA SERVICES, INC.  
In PA 215-363-2400

CIRCLE 463 ON READER SERVICE CARD

## Repair

MAC HARD DRIVE EXPERTS



**WE CAN SAVE IT!**  
★ Repair ★ Recover ★ Upgrade

CIRCLE 510 ON READER SERVICE CARD

## Furniture for the Macintosh

Nationally advertised fine oak furniture

**Save up to  
40%  
factory direct!**

- CAD-CAM WORKSTATIONS
- LASERWRITER CARTS
- PRINTER STANDS
- AND MORE...

Call Now  
**For Free Catalog**

**1-800-333-8095**

The Walker Company Petaluma, CA

CIRCLE 543 ON READER SERVICE CARD



## Multimedia

### Macintosh To Video.

Choose the highest quality Macintosh to video transfer services available today.  
**Creativision at Telemation.**

Real Time  
Frame-By-Frame  
PICS, PICT, MacroMind Director and  
Accelerator, 3D Works, SuperCard  
and others

Output through state-of-the-art  
Lyon Lamb scan converter to 3/4 SP,  
BetaSP, One Inch and D2 formats.

8745 E. Orchard Rd., Ste. 500  
Englewood, CO 80111  
(303) 290-8000

CIRCLE 470 ON READER SERVICE CARD

## Accessories

## Furniture

*"I saw it in  
Macworld!"*

## DUPLICATION FROM \$99 HIGHEST QUALITY MEDIA

Macintosh 3.5" DS/DD duplication starts at just \$99. Prices go even lower as you continue to order!

- Duplication + 100% Verification
- Custom Labels/Sleeves/Mailers
- Custom Packaging & Assembly
- Colored Media Available
- Special Rates For Demo Software & Site Licensing
- Educational Discounts Available
- 24 Hour Turn-Around
- Guaranteed Products

**800-255-3142**

Diversified Systems Group, Inc.  
PO Box 1114, Issaquah WA 98027

CIRCLE 496 ON READER SERVICE CARD

## Laser Recharge

## reconditioned TONER cartridges!



BETTER THAN NEW!

- 20% MORE TONER
- DARKER PRINT
- 100% GUARANTEED

Willow Products Corp.  
3857 Willow Ave, Pgh, PA 15234

for laser printers  
& Canon PC Copiers

From **\$44<sup>95</sup>**

We buy empties  
call for brochure  
**800-426-8196**



CIRCLE 445 ON READER SERVICE CARD

## "THE BEST MAC DESK EVER!"

Mac Friends

**FREE  
CATALOG**

- Ergonomic
- Space Saving
- Strong



**agio**  
DESIGNS  
503 - 690 - 1400

**800-688-2446**

agio JAPAN (03) 5682-9262

CIRCLE 402 ON READER SERVICE CARD

AS LOW  
AS  
**\$199**



For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## Mouse Pads

### Your Logo Specialist

Qty. (Lexan—hard surface)

12	\$6.45 wo/logo	N/A
36	\$5.95 wo/logo	N/A
72	\$5.70 wo/logo	\$6.50 w/logo
144	\$5.15 wo/logo	\$5.20 w/logo
500	\$4.80 wo/logo	\$4.60 w/logo
1000	\$4.48 wo/logo	\$4.48 w/logo

Choose your color. Size 8 1/2 x 11

Ask for samples. We specialize in

private label. Great promo item.

Satisfaction Guaranteed

Innovative Technologies

619/456-0722 Fax 619/456-2732

800/522-5654 (CA)

800/544-5654 (USA)

## Mouse Pads

Custom Printing Available.

Cloth: 13 Colors

Size: 8x7 1/4 8x9 1/2 8 1/2 x 11

12 Pads 3.25 3.50 3.75

72 3.00 3.25 3.50

144 2.85 3.00 3.25

PLASTIC: Blue, Platinum, Gray, Red &

Black. Size: 8 1/2 x 11

12 Pads 6.50 36 6.00

72 5.75 144 5.25

ASK US ABOUT OUR PICTURE PADS!

Precision Line Inc.

14505 21st Ave. No. Ste. 206

Plymouth, MN 55447

612/475-3550, 1/800/328-0077

## Supplies

**FREE CATALOG**

**COMPUTER SECURITY PRODUCTS**

• Theft Protection • Unauthorized Access/Use Control • Software Security

**1-800-766-LOCK**

**DOSS INDUSTRIES**

1224 Mariposa St. SF CA 94107

CIRCLE 411 ON READER SERVICE CARD

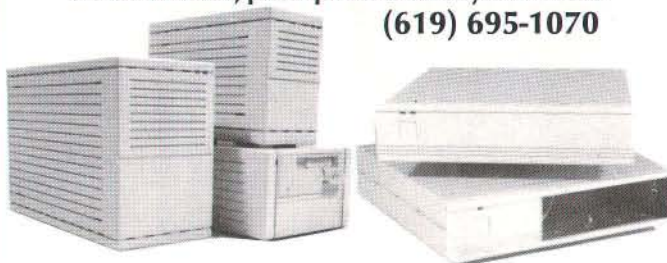
## SCSI ENCLOSURES

FOR DISK, TAPE & OPTICAL DRIVES

### Standard & Custom Models SCSI & SCSI II Interfaces

Plastic • Metal • High Tech • High Quality. Call Today for information, price quotes to meet your needs...

(619) 695-1070



### LIEN ENGINEERING

7940 Arjons Drive • San Diego, CA 92126

CIRCLE 531 ON READER SERVICE CARD



A 50-YEAR TRADITION

**ZERO HALLIBURTON**

### The Best Case Scenario

Airline Check-in or Local Use

Zero Halliburton Aluminum Mac Cases: Lightweight, Durable, Distinctive Styling CLASSIC/Plus/SE II/ci IIs LC II/x Portable Attaches Monitor & Printer Cases

from \$299.95 1-800-542-4591  
1-213-578-9710

TCC 13101 Wash. Blvd., #110, L.A. CA 90066

CIRCLE 403 ON READER SERVICE CARD

3.5" DS/DD Bulk Disks  
**39¢** ea. in lots of 25

3.5" DS/HD Bulk Disks  
**79¢** ea. in lots of 25

3.5" Disk Cases - Protects up to 50 Disks  
**\$2.97** each (for 2 or more)

Apple ImageWriter I & II Ribbon  
**\$1.67** each (In Packs of 6)

4-Color Apple ImageWriter II Ribbon  
**\$5.97** each (In Packs of 2)

Mouse Pad **\$2.99**

3.5" User Labels - In Assorted Colors  
(\$1.50 per pack of 50 labels)

Add shipping - 55¢ per 25 3.5" disks; 80¢ per disk case; \$1.60 per pack of ribbons; 55¢ per mouse pad; User Labels - No shipping charge  
Add Order Processing, Packaging & Handling - \$3.00 Per Order

MEI/Micro Center - 1100 Steelwood Rd.  
Columbus, Ohio 43212

**Call 1-800-634-3478**

MWC 16

CIRCLE 477 ON READER SERVICE CARD

## DUST COVERS

### ALL FABRIC

- Heat Ventilating, will not become stiff or crack with age! • Easy to Use • Machine Wash & Dry!
- Highest Quality, Custom-Fit!
- All makes & models! • Custom orders! • Available in Gray, Tan, Navy, Royal, Red or Brown.
- 100% Satisfaction Guaranteed!
- Outstanding service since 1983!

11-30 Mac Classic & Keyboard	24.95	11-32 Mac ILLC, 12" Mini A/D 29.95	
10-56 Mac Plus & Keyboard	24.95	10-88 Mac SE or II Ext Keyboard	9.95
10-74 Mac SE & Keyboard	24.95	11-54 AppleColor 13"HR Mon	19.95
10-75 Mac SE & Ext Keyboard	24.95	11-23 Radius Pivot Monitor	24.95
11-30 Mac ILLC Computer Only	15.95	10-95 Radius 2 Page Display	24.95
11-30 Mac ILLC 13"HR Cr A/D	29.95	11-22 Super Mac 10" Cr Mon	29.95
11-37 Mac ILLC 12" Mtr & Kb	29.95	11-04 Apple Scanner	15.95
10-73 Mac II, Cr Mtr & Ext Kb	29.95	10-37 ImageWriter II	15.95
11-02 Mac II, ILLC CPU	19.95	10-90 LaserWriter II	24.95
11-01 Mac ILLC Computer Only	15.95	11-25 Personal LaserWriter	24.95
10-98 Mac ILLC, Cr Mtr & E Kb	29.95	11-40 T.J. microLaser PS	19.95
11-30 Mac ILLC 13"HR Cr A/D	29.95	SKIN Keyboard Skins	21.95

Add \$4.00 Shipping & Handling (Check, MC, OOD, VISA/MC) "MWC Spot"  
CO-DU-CO Computer Dust Covers  
4802 W. Wisconsin Ave., Milwaukee, WI 53208  
800-735-1584 414-478-1584 • 414-478-5929 FAX

CIRCLE 455 ON READER SERVICE CARD

## MAC FREIGHTERS

The Best Deluxe ATA Shipping Cases  
"Super Strong" made of steel, aluminum & ABS.  
The Ultimate airline check in or shipping containers

### WHOLESALE PRICES

In stock - same day shipping  
Custom cases made to order  
Accept VISA, Mastercard, Company PO's

MicroOvernight Inc. For more information call: 1-800-228-7042



**Linebacker**

CIRCLE 546 ON READER SERVICE CARD

## Macworld Magazine.

When you get down to business, you can't do without it.

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





## MACWORLD CIRCULATION REACHES YOUR MARKET

With the leading circulation in the market—385,000, Macworld delivers your advertising to a powerful audience—dealers, VADs and VARs, more newsstand buyers, corporate managers, the latest upgrade buyers, Macintosh buyers and premium paid subscribers. You simply can't reach a more qualified audience.

## ACTIVE BUYERS

63% of Macworld subscribers are active buyers and have purchased products directly as a result of seeing an advertisement in Macworld.

(Macworld Subscriber Study 1990)

## POWERFUL BUYERS

84% of Macworld subscribers have purchase involvement for personal computers and related products within their organization.

(Macworld Subscriber Study 1990)

## MacSac

For people going somewhere

Cordura exterior for durability. Thick, high-density foam padding for shock absorption. Padded pockets to protect keyboard, peripherals and drive. Color choices.



Mac Plus, SE, MacClassic, MacIcx, ci, MacIli, MacPortable, MacLC and others

**ComputerAid**

800-343-3388  
401-274-0595

A Division of Karen Anne Mfg. Fall River, MA

CIRCLE 423 ON READER SERVICE CARD



## Pack your Mac in seconds!

Cordura case has internal padded pockets for mouse, keyboard and drive.

Available in six colors.

Extended Keyboard version also available.

For a dealer near you  
call toll free

**1-800-548-0053**

West Ridge Designs  
1236 N.W. Flanders  
Portland, OR 97203

CIRCLE 444 ON READER SERVICE CARD

DUST COVERS

## ComputerWear

100% COTTON CANVAS

MAC, SE, II, & PRINTERS

Beige w/ Grey Trim Breathable! Static-Free!

**NEW! Seal-Skins**

For Keyboards

**1-(800) 826-5761**

Int'l: (415) 759-1466 Fax: (415) 564-0506

Contemporary ComputerWear 1320-36th San Francisco 94122

CIRCLE 507 ON READER SERVICE CARD

## Dust Covers

for a Clean Machine

Protect your equipment from dust, spills, and aggravating downtime with ABCOM DUST COVERS for personal computers.

Attractive, water resistant packcloth in NAVY, SILVER, or BROWN

Custom-fitted, stylish, and durable.

With the original rainbow ribbon accent.

Extensive selection of dust covers for over 400 models, including:

- IBM
- APPLE II SERIES
- MACINTOSH
- and numerous printers.

MC & VISA ACCEPTED. PLEASE WRITE OR CALL FOR COMPLETE PRICE LIST AND BROCHURE

2333A N. SIERRA HWY, BISHOP, CA 93514

619/872-1946

CIRCLE 484 ON READER SERVICE CARD

**1.44MB**  
HIGH DENSITY  
100% ERROR FREE  
BULK DS/HD

**800 KB**  
DOUBLE DENSITY  
100% ERROR FREE  
SONY BULK DD

**79¢** EACH IN LOTS OF 25

**SONY \$1.29**

**LIFETIME WARRANTY!**

**SONY 49¢** 800 KB IN LOTS OF 50

**SONY HD 1.44 MB Box of 10 (10x2) ... \$16.90 /Bx**

**SONY DD 800 KB Box of 10 (10x2) ... \$8.49 /Bx**

**4800Bd Send FAX Modem & Software \$99.95**

**by ZOOM—Built-in 2400Bd 100% Hayes Comp. Modem!**

**Sends to any Group 3 FAX or modem. Schedules FAX times, keeps logs. Speaker, 8 LEDs, Suppresses Lighting & Line-Noise, w/Pwr Supply. Cable—\$9.95**

**AMERICAN GROUP**

**800-288-8025**

12132 Sherman Way, N. Hollywood CA 91605

818-765-3040

**FREE 48-Page Catalog!**

CIRCLE 524 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



MACWORLD

# PRODUCT LAUNCH

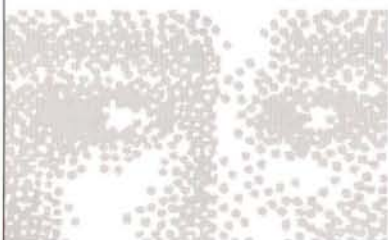
## SECTION

Turn to the Product Launch Section of Macworld for information on the new products in the Macintosh industry.

This is the premiere showcase for new product launches or relaunches. Look to the Macworld Product Launch section—your source for the newest Macintosh products.

Call your account executive for more details on advertising in the Macworld Product Launch section!  
**(415) 243-0505**

## Video In.



Truly affordable video imaging for Macintosh II computers. ComputerEyes includes everything you need to capture 8- or 24-bit color (or 8-bit gray scale) images from any standard composite or S-Video source.

Gray scale-only version also available for Mac+, SE, or II for under \$250.

Call today for more information and free demo disk.

Digital Vision, Inc.  
270 Bridge St., Dedham, MA 02026  
(617) 329-5400  
To order call (800) 346-0090

*Professional  
Series*

*Color  
Video*

*Digitizer*

*For Under*

*\$ 450.*

*Digital Vision*

C O M P U T E R E Y E S <sup>TM</sup>

## Don't Forget!



Send for the latest edition of the free Consumer Information Catalog. ☐ The Catalog lists over 200 selected federal publications of consumer interest on subjects like health, nutrition, federal benefits, money management. ☐ The Catalog is free and so are many of the booklets. ☐ Just send your name and address, no strings attached. Write today:



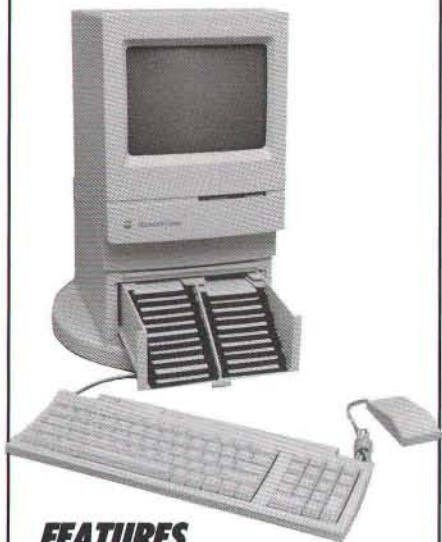
**Consumer Information Center  
Department DF  
Pueblo, Colorado 81009**

A public service of this publication and the Consumer Information Center of the U.S. General Services Administration.



## Mac-Mate ACCESSORY BASE

FOR APPLE SE, SE30,  
SE30 PLUS, 512K AND  
SE CLASSIC COMPUTERS



### FEATURES

- Raises your computer to a more functional eye level.
- Diskette storage drawer, which is removable, holds up to 22 diskettes.
- Built in swivel base allows you to rotate your computer a full 360 degrees in either direction.
- Matches the color of your computer for a overall integrated look.
- Comes fully assembled for immediate use.

The Mac-Mate Accessory Base is manufactured under U.S. Patent #4,946,127. Other U.S. Patents and foreign patents applied for.

### RETAIL SELLING PRICE:

Mac-Mate Accessory Base . . . . \$99.95  
Shipping & Handling . . . . . 6.00  
Illinois residents add 6¼% sales tax

*Ark International, Inc.*

To order by Visa, MasterCard:  
1-800-232-6221 / 1-800-232-MAC1  
or  
(708) 960-7463 / Fax (708) 960-7472

or mail check to:  
1950 Ohio St., Lisle, IL 60532

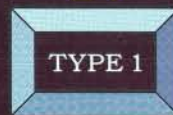
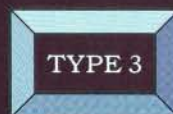
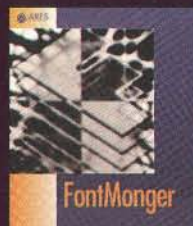
All product names are trademarks  
of the respective companies

# CONFLICTS OF ALL TYPES SOLVED. \$99.95.

Now all your fonts can get along.  
Because FontMonger™ software converts type formats between PostScript® Type 1 (for use in Adobe Type Manager™), Type 3 and TrueType® (for System 7.0). It also provides complete Adobe Illustrator® support for TrueType, since all your converted fonts can be imported and exported as Illustrator files.

You can even generate customized typefaces and characters — such as obliques, true fractions, small caps, graphics and logos — and load them directly into your existing fonts.

So call 1-415-578-9090 for the name of the FontMonger dealer nearest you. And solve your type conflicts once and for all.



Going from one format to another takes just two clicks.



FontMonger is a trademark of Ares Software Corporation. PostScript and Adobe Illustrator are registered trademarks and Adobe Type Manager is a trademark of Adobe Systems Inc. TrueType is a trademark of Apple Computer, Inc. © Ares Software Corporation 1991. All rights reserved.





## CHOOSING THE RIGHT HARDWARE AND SOFTWARE NEEDN'T BE A WEIGHTY DECISION.

You could wade through your weight in magazines, brochures and manuals trying to decide which of the 4,900-plus Macintosh-related products are right for you. Or you could subscribe to the Macintosh Product Registry.

Virtually everything you can put in, run on, and connect to a Mac is described. In detail. With prices. Plus where to call or write to order.

The information is organized

in five major categories and 64 subcategories. Finding what you want is easy. So is comparison shopping.

The Registry is published four times a year, keeping you informed of new products and upgrades as fast as they come on the market. The annual subscription price is \$40\* in the USA, a third off the newsstand price. That's a

mere pittance of what you'd pay trying to collect all that information any other way.

Don't weigh yourself down trying to get all the facts on Macs. Do a little light reading instead. Subscribe to the Macintosh Product Registry today.

Call toll-free 800-262-3012.

\*\$60 in Canada, \$100 elsewhere. Corporate and bulk subscription discounts are available.

**MACINTOSH  
PRODUCT  
REGISTRY**

**All Facts No Fiction.**

**CALL TOLL FREE 1-800-262-3012**



# Let NewGen satisfy your hunger for high-resolution with an affordable 800 dpi printer!

Text for the menu was created in PageMaker, saved as EPS files and placed in FreeHand.

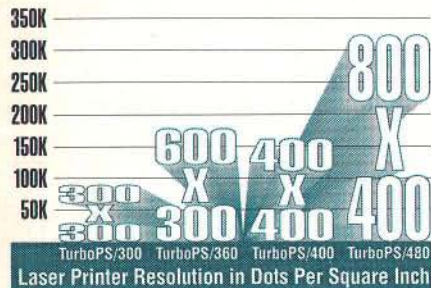
The Images with Impact® clip art illustrations were edited with FreeHand and color was specified in cyan, yellow, magenta and black.

The Apollo logo was created in FreeHand where the various elements were edited and combined.

Add powerful applications like PageMaker®, FreeHand® and Adobe® Type Fonts to produce typeset quality output at your own facility.

The NewGen TurboPS/480 can produce PostScript® language compatible output at 800 x 400 dpi, nearly four times the resolution of other laser printers. And when we say PostScript compatible, we mean it, including Type 1 fonts, special effects and EPS files from all your favorite applications and programs.

The NewGen TurboPS/480 is a complete printer with built-in AppleTalk®, parallel and serial ports. And unlike some printers, it works in mixed Mac-PC



Resolution close up, 18 point Garamond Italic enlarged 500%



300 x 300 dpi LaserWriter II    800 x 400 dpi NewGen PS/480    600 x 600 dpi Varityper VT-600

environments, and it doesn't require an internal PC processing board or dedicated server.

To show you how confident we are that you'll be impressed with 800 x 400 dpi output, we printed this page at actual size, including the menu which was output as color separations.

What does all this resolution and compatibility cost? Very little. The TurboPS/480 - with 800 x 400 dpi and RISC performance - lists for about 25% to 50% less than its competitors, while our TurboPS/400, TurboPS/360 and

**ENTRES & SPECIALS**

The Oceans Finest  
Enough shrimp, lobster  
to feed several...

I'm Game  
Swordfish sauce  
wine sauce, pr

Have We  
If you like  
Bring  
Spicy  
Be

**SOMETHING SWEET**

Feastboard  
Exotic fruits and herbs to please a crowd... \$9.95

The Finale  
The perfect way to end the perfect meal.  
Light and wonderful... \$4.95

Gluttons Delight  
If you like a mishmash of everything that's awfully flavoring... \$4.95

The Chocolate IV  
Chocolate will break out in a cold sweat when they see this... \$8.95

No Mercy  
Your whole party will enjoy pigging out on this one... \$7.95

I Came, I Saw, I Conquered  
Adding. Positively adding... \$12.95

I Can't Believe I Ate The Whole Thing  
Neither you nor your friends will believe  
what you have consumed... \$5.95

**BREAD & CHEESE**

Bread Like No Other Bread  
Baked in our ovens just minutes ago... \$2.95

The Wine Chaser  
Nothing complements fine wine like fresh  
bread and tangy cheese...



TurboPS/300 laser printers cost less than slower 300 and 400 dpi PostScript language printers.

If you have an appetite for high-speed, high-resolution PostScript language printing, call 714/641-8900 today to get your TurboPS evaluation kit.

Dealer inquiries welcome.



This ad was created and separated on a TurboPS printer. For information about its production, contact NewGen Corporation.



**NewGen Systems Corporation™**

17580 Newhope Street, Fountain Valley, CA 92708  
Telephone (714) 641-8900 FAX (714) 641-2800

NewGen, NewGen Systems Corporation, NewGen logo, TurboPS/300, TurboPS/360, TurboPS/400, TurboPS/480 are trademarks of NewGen Systems Corporation. Aldus PageMaker and Aldus FreeHand are registered trademarks of Aldus Corporation. PostScript is a registered trademark of Adobe Systems, Inc. NewGen's PostScript language interpreter is fully compatible with Adobe PostScript. All other brand product names are trademarks or registered trademarks of their respective companies.

Dealers Circle 244 on Reader Service Card

End Users Circle 246 on Reader Service Card



# BEST-SELLERS

Months on chart

Last month

This month

▼	▼	▼		
<b>BUSINESS SOFTWARE</b>				
72	1	1	<b>Microsoft Word</b>	Microsoft Corporation
51	3	2	<b>Microsoft Works</b>	Microsoft Corporation
63	2	3	<b>Microsoft Excel</b>	Microsoft Corporation
59	4	4	<b>Aldus PageMaker</b>	Aldus Corporation
24	5	5	<b>FileMaker II</b>	Claris Corporation
48	7	6	<b>MacWrite II</b>	Claris Corporation
25	6	7	<b>QuarkXPress</b>	Quark
11	8	8	<b>Quicken</b>	Intuit
19	10	9	<b>Adobe Illustrator</b>	Adobe Systems
15	9	10	<b>Aldus FreeHand</b>	Aldus Corporation

## EDUCATION SOFTWARE

26	1	1	<b>Where in the World Is Carmen Sandiego?</b>	Broderbund Software
7	2	2	<b>Where in Time Is Carmen Sandiego?</b>	Broderbund Software
39	4	3	<b>Reader Rabbit</b>	The Learning Company
13	3	4	<b>Where in the USA Is Carmen Sandiego?</b>	Broderbund Software
52	5	5	<b>Math Blaster</b>	Davidson & Associates

## ENTERTAINMENT SOFTWARE

17	2	1	<b>SimCity</b>	Maxis
15	1	2	<b>Tetris</b>	Spectrum HoloByte
2	3	3	<b>SimEarth</b>	Maxis
9	4	4	<b>Welltris</b>	Spectrum HoloByte
25	5	5	<b>Falcon</b>	Spectrum HoloByte

## NETWORK/DATA COMMUNICATIONS

51	1	1	<b>TOPS</b>	Sitka Corporation
46	2	2	<b>AppleShare</b>	Apple Computer
10	3	3	<b>MicroPhone II</b>	Software Ventures
8	4	4	<b>Timbuktu</b>	Farallon Computing
5	5	5	<b>White Knight</b>	FreeSoft

Months on chart

Last month

This month

▼	▼	▼		
<b>MASS STORAGE*</b>				
15	1	1	<b>MacStack SD40</b>	CMS Enhancements
1	—	2	<b>Micro/Removable MR45</b>	MicroNet Technology
3	4	3	<b>UltraDrive 45</b>	GCC Technologies
2	5	4	<b>MacStack SD45</b>	CMS Enhancements
30	2	5	<b>MacStack SD20</b>	CMS Enhancements

## ADD-IN BOARDS

7	3	1	<b>Pivot</b>	Radius
6	1	2	<b>Macintosh Display Card 8•24</b>	Apple Computer
1	—	3	<b>Macintosh IIsi NuBus Adapter Card</b>	Apple Computer
8	2	4	<b>Radius TPD Interface</b>	Radius
1	—	5	<b>Video ColorBoard 364</b>	RasterOps

## UTILITY SOFTWARE

13	1	1	<b>SAM II</b>	Symantec Corporation
7	3	2	<b>The Norton Utilities for the Macintosh</b>	Symantec Corporation
13	2	3	<b>SUM II</b>	Symantec Corporation
12	4	4	<b>Adobe Type Manager</b>	Adobe Systems
7	—	5	<b>Virex</b>	Microcom Software Division

## PRODUCT WATCH

Recent or forthcoming products of particular interest.

### Picture Press

*Storm Technology*  
PICT file-compression utility that includes selective compression on foreground areas

### Mariah

*Symmetry*  
Sound and graphics front end for multimedia producers

### FrameMaker 3.0

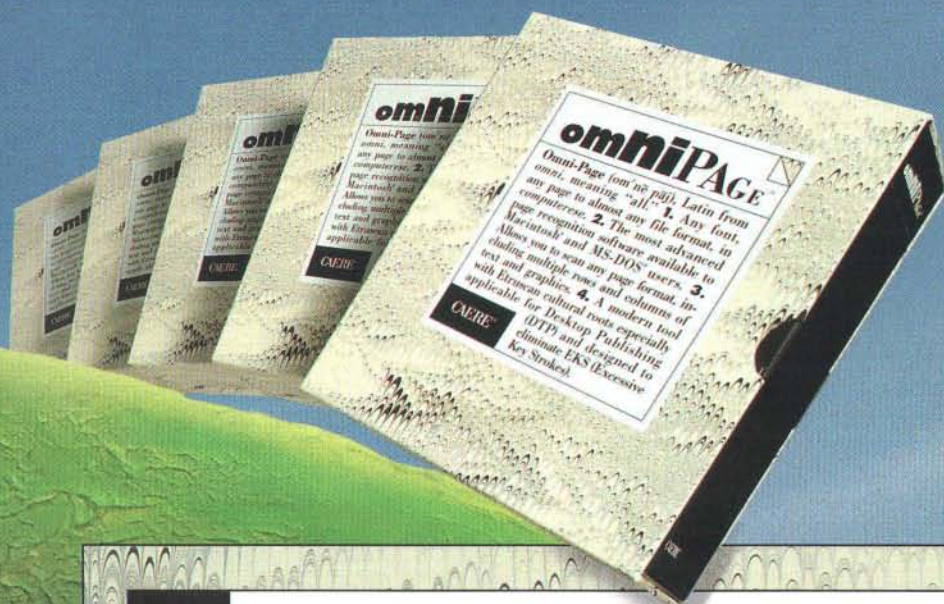
*Frame Technology*  
Integrated publishing software that now adds tables and color-separation capabilities

Source: Exclusive InfoCorp survey of more than 125 Macintosh retailers and selected mail-order vendors. Covers sales during January 1991.

\*Does not include hard drives installed at the factory.



# The World's Most Popular OCR



For tens of thousands of Macintosh® users around the world, *OmniPage*™ is the OCR product of choice, replacing needless keystrokes – just about eliminating the need to type. In fact, 8 out of 10 Macintosh users have made *OmniPage* their Omnifont OCR software of choice.

With *OmniPage* you can scan pages of text, numbers – even graphics – in minutes; and take it directly into almost any word processing, spreadsheet or database file. With *OmniPage* your computer can read virtually any font, no matter what size, or column format – so reading a magazine with multiple fonts and columns is just as easy as reading a single-page business letter.

Believe it or not there are still some Macintosh users out there who haven't

gotten the *word* about *OmniPage* – the fastest and most accurate OCR software on the market today. And that *OmniPage* can really make a difference in their business or profession – especially when it comes to turning around business reports, desktop published documents or presentations. Not to mention some of the other possibilities; including manuals, invoices, resumes, legal contracts, price lists, financial statements – multiple-page, compound documents.

Unleash the untapped power of your Macintosh. See for yourself why *OmniPage* has received *worldwide* acclaim and recognition as the OCR software product of the 90s. *OmniPage* from Caere, the Complete Recognition Company.

All ® registermarks and ™ trademarks are of their respective manufacturers. ©1991 Caere Corporation. All rights reserved.

Caere Corporation  
100 Cooper Court  
Los Gatos CA 95030  
1-800-535-SCAN

**CAERE**®





Keyboard Shelf and SideClip with Macintosh SE/30.



Keyboard Slideaway with Macintosh IIcx.

## SPACE THAT WORKS

You're tripping over your keyboard. Your CPU needs its own desk. Your monitor is too low. That report you're working on has vanished. Paper is everywhere.

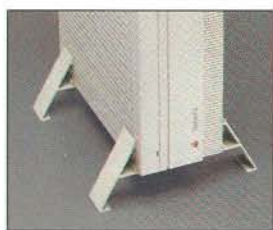
But don't give up.

What you need is some help from Kensington.

Increase valuable desk space with our new Keyboard Shelf for the compact Mac, or with Keyboard Slideaway® for the Mac II.

Both do more than just get your keyboard out of the way.

Keyboard Shelf's recessed storage compartment is ideal for holding pens, disks and other desk items. And Keyboard Slideaway extends a narrow desktop into a wider workspace.



Another way to increase your workspace is our sturdy Mac II stand. The perfect addition for anyone who wants to get their CPU off their desk and onto the floor.

For the compact Mac, there's Maccessories® Tilt/Swivel. With it, you can rotate your Mac up to 100° and tilt up to 16° for just the right viewing position. And unlike other tilt/swivels, we've combined heavy duty plastic and high density polyethylene for an ultrasmooth movement.



What's more, Kensington's products fit right in with the design of your Mac. The styling is complementary. The colors identical. Even the same materials are used.

Kensington.

Because you can't work efficiently if your space doesn't work.

For a free brochure and the dealer nearest you, call 800-535-4242 OR 415-572-2700.

**KENSINGTON®**

Circle 255 on reader service card

Maccessories, Keyboard Slideaway, SideClip, and Kensington are registered trademarks of Kensington Microware Limited. Apple and Macintosh are registered trademarks of Apple Computer Inc.  
© 1990 Kensington Microware Limited.



# MACWORLD

*The Macintosh® Magazine*

*April 1990 \$3.95*

*Canada \$4.95*

## GRAY-SCALE SPECIAL

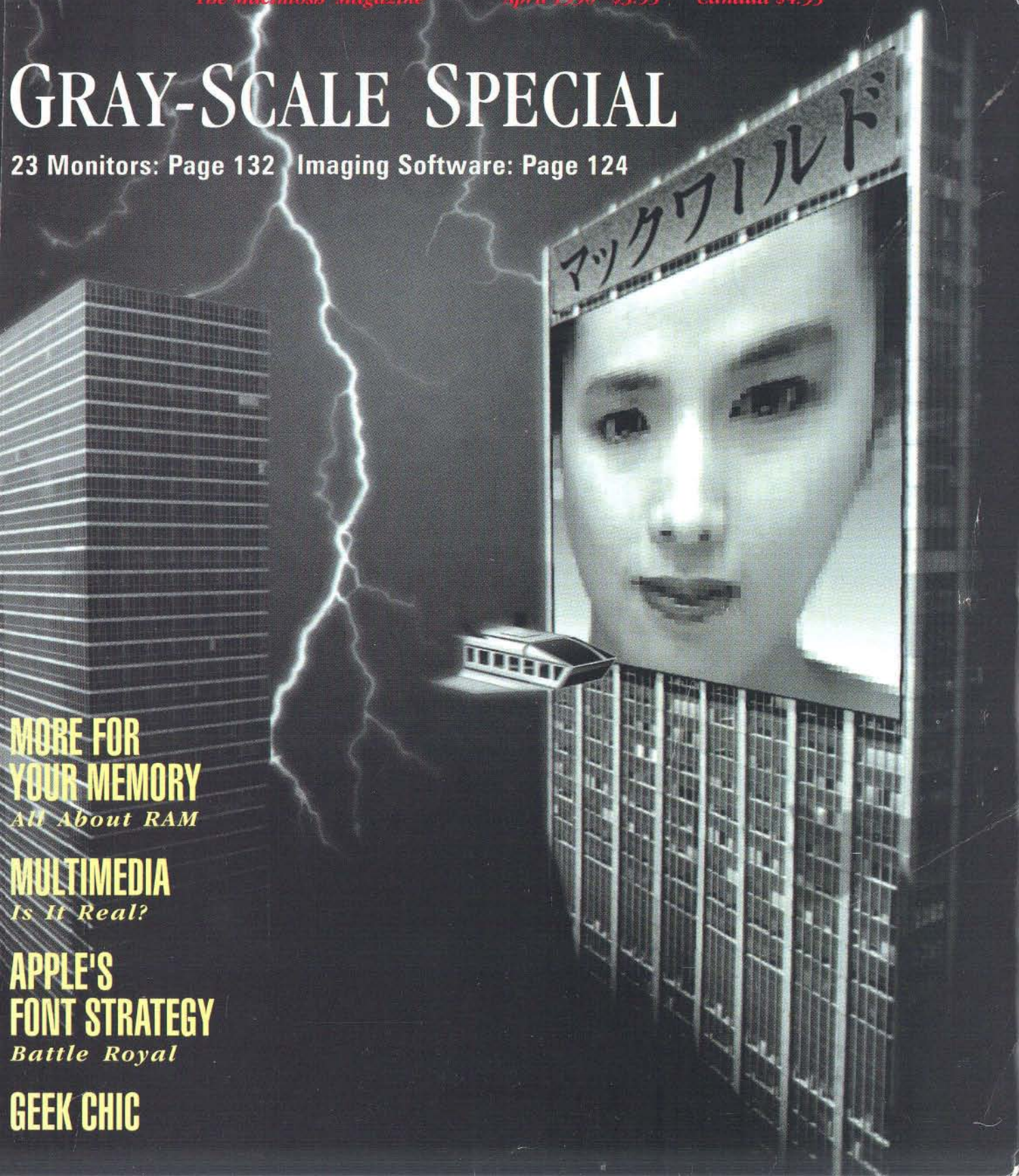
23 Monitors: Page 132 Imaging Software: Page 124

**MORE FOR  
YOUR MEMORY**  
*All About RAM*

**MULTIMEDIA**  
*Is It Real?*

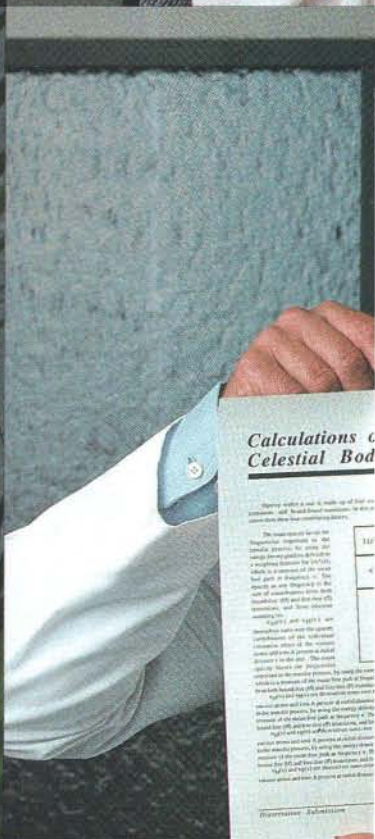
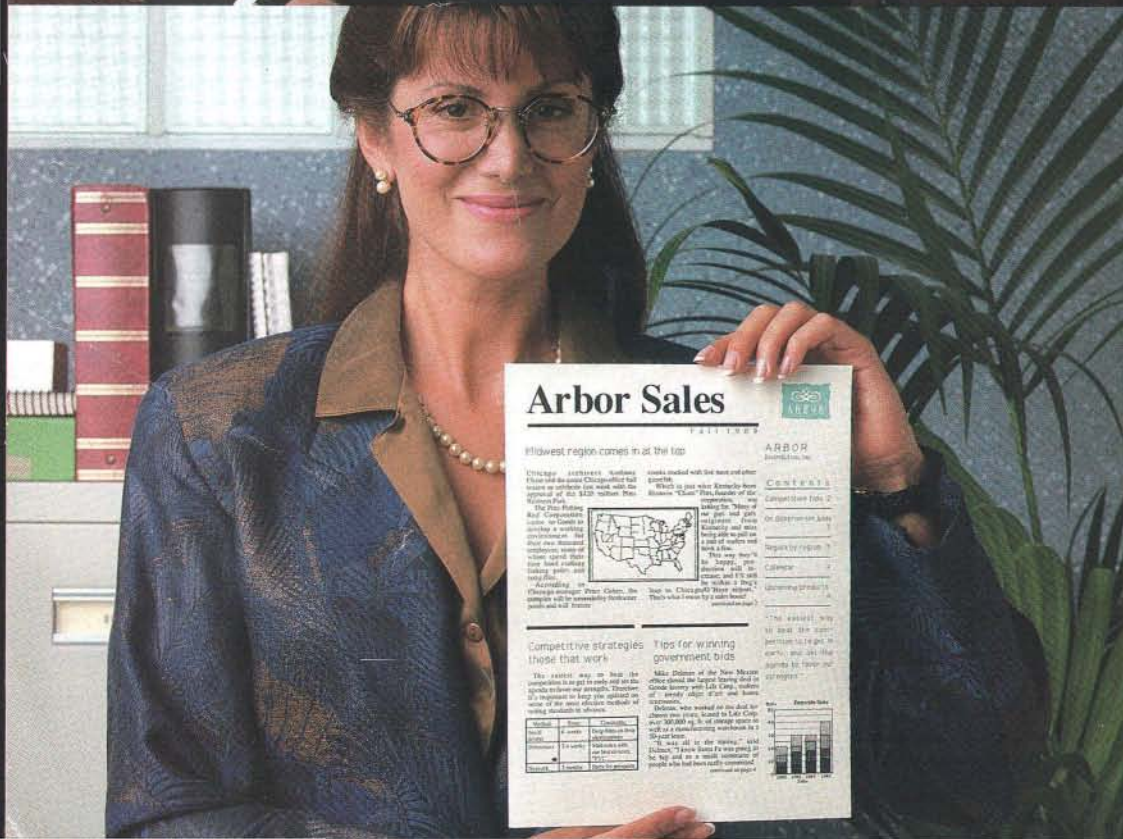
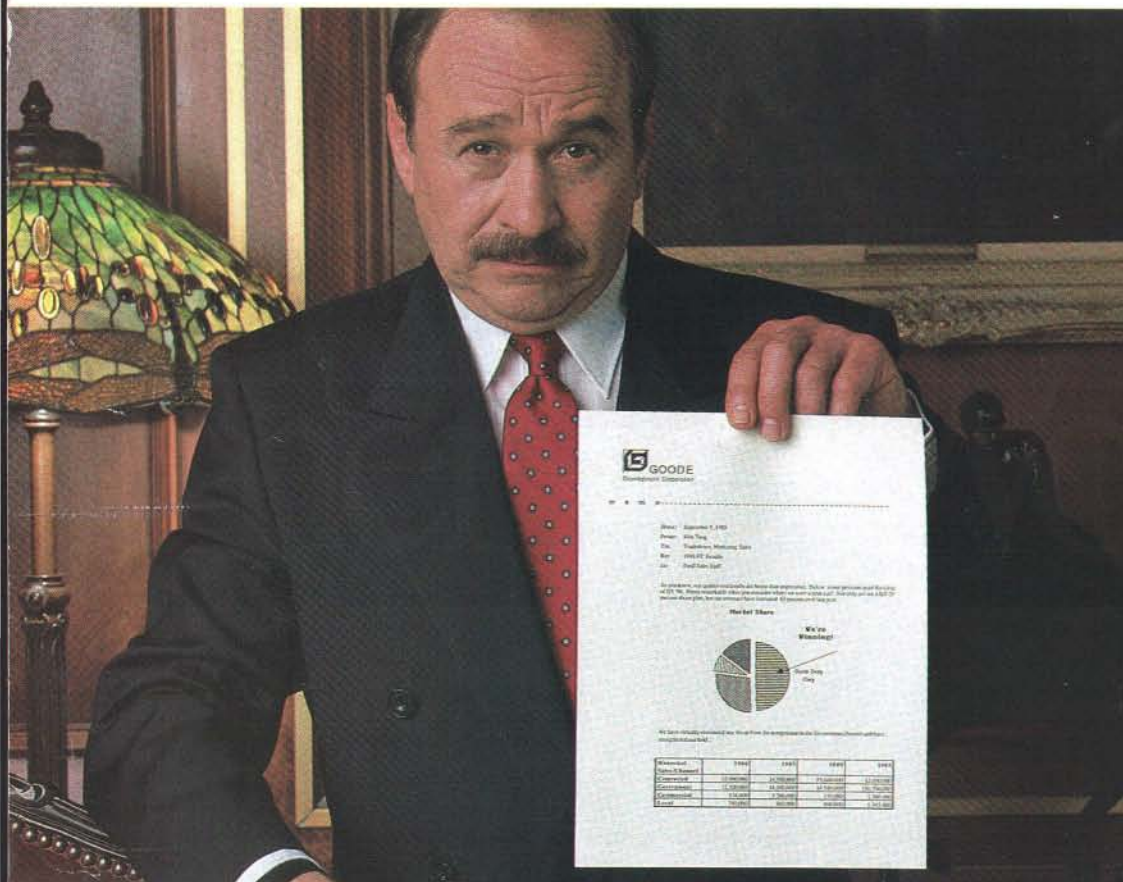
**APPLE'S  
FONT STRATEGY**  
*Battle Royal*

**GEEK CHIC**



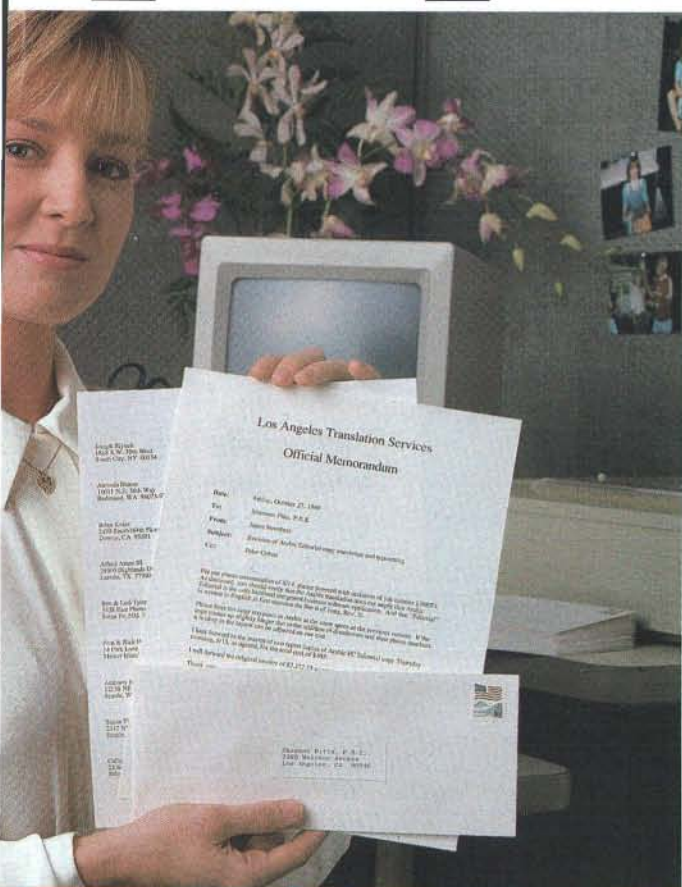


# There's a Word for





# r people like you.



Whether you're a marketing maven on your way up, a scientist knee-deep in formulas, or a temp trying to cope with an unfamiliar corporate mindset, when it comes to putting thoughts to paper, Microsoft is the Word for you.

And our users aren't the only ones who think so. Recently, the editors of *Mac User* gave Microsoft® Word version 4.0 the highest rating of any Macintosh® word processing program. Period.

A move we weren't altogether surprised by. You see, besides being perversely committed to research and development, we use a highly sophisticated approach to improving our product. We listen.



All of which has led to innovations like Word 4.0's powerful Table feature, enabling users to create side-by-side paragraphs, lists and even forms, without the hassle of dealing with tabs.

And since there *are* other word processing programs, Word 4.0 provides connectivity to Microsoft Word version 5.0 for the PC, PC WordPerfect®, DCA and other file formats. So now you can share your work with those less fortunate than yourself.

What's more, Word 4.0 is uniquely capable of delivering even more performance when it's used with other applications. For example, even highly educated executives can import Microsoft Excel tables and charts and automatically update them. Making it easy to ensure document accuracy. Plus, Microsoft Mail can be sent from within Word 4.0, significantly boosting work-group productivity.

For something a tad more informative than this ad, call (800) 541-1261, Dept. J92, to receive a brochure or ask for the location of your nearest dealer for a demo. You'll find that no matter what type of word processing you're performing, you could be doing it better.

Just take our Word for it.

**Microsoft®**  
Making it all make sense®

Customers inside the 50 United States, call (800) 541-1261, Dept. J92. In Canada, call (416) 673-7638. Outside the U.S. and Canada, call (206) 882-8661. © Copyright 1989 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks and *Making it all make sense* is a trademark of Microsoft Corporation. Macintosh is a registered trademark of Apple Computer, Inc. WordPerfect is a registered trademark of WordPerfect Corporation.



# CONTENTS

## DEPARTMENTS



For the sharpest monochrome monitors, see page 132. On page 124, we contrast gray-scale editors. (Cover art by Arne Hurty. Stock photography by After-Image.)



A special report on the future of fonts, page 146.

How to Contact Macworld .....	12
MacBulletin .....	17
Commentary/Jerry Borrell .....	23
Letters .....	31
Art Beat .....	45
<i>By Deborah Branscum</i>	
The Iconoclast .....	51
<i>By Steven Levy</i>	
Conspicuous Consumer .....	71
<i>By Deborah Branscum</i>	
State of the Mac .....	81
<i>By Bruce F Webster</i>	
News .....	93
<i>By Dan Littman and Tom Moran</i>	
New Products .....	209
How To/Quick Tips .....	219
<i>By Lon Poole</i>	
How To/Getting Started with Memory .....	235
<i>By Jim Heid</i>	
How To/Insights on PageMaker 4.0 .....	243
<i>By Steve Roth</i>	
Updates .....	253
Where to Buy .....	259
Best-Sellers .....	300



## FEATURES

**Multimedia: Is It Real? ..... 116**

*By Suzanne Stefanac and Liza Weiman* A look at the promises and problems that face today's multimedia developers.

**Gray-Scale Contrasts ..... 124**

*By Joe Matazzoni* New programs for manipulating black-and-white scans challenge Digital Darkroom and ImageStudio. Be sure you buy the best.

**Monochrome Monitor Mania ..... 132**

*By Robert C. Eckhardt* Macworld picks the best and the brightest Macintosh monochrome and gray-scale monitors.

**GeekChic ..... 141**

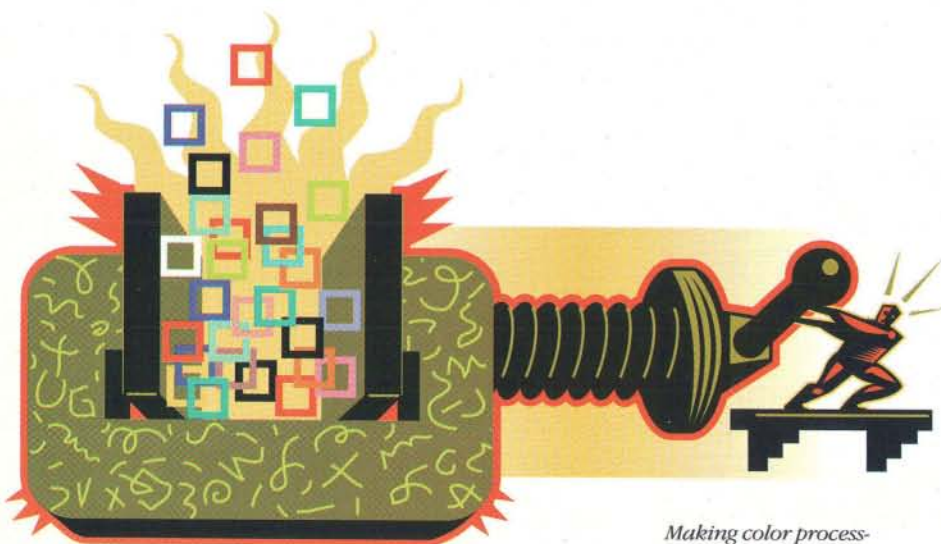
Haute tech is all the rage—our new weekly helps you stay in vogue.

**Battle Royal ..... 146**

*By Erfert Fenton* Apple's Royal font format is poised to challenge PostScript. When the dust clears, will we find enhanced functionality or just greater chaos?

**More for Your Memory ..... 154**

*By Jim Heid* Although new software gobbles up ever increasing amounts of memory, don't panic. Here's how to make the most of a limited resource.



*Making color processing more manageable, page 81.*



## REVIEWS

QMS-PS 820 turbo ..... 166  
*PostScript laser printer.*

America Online ..... 167  
*Online information service.*

Prodigy 1.0 ..... 168  
*Online information service.*

TrueForm 2.0 ..... 172  
*Electronic forms management.*

DataFrame XP100,  
DirectDrive 130,  
MacinStor 100-ZFP ..... 174  
*Three midcapacity hard drives.*

POS-IM 2.0 ..... 179  
*Point of sale-inventory management.*

Fujitsu RX7100PS ..... 181  
*PostScript printer.*

MusicProse 1.0 ..... 183  
*Music composition and publishing software.*

The Kurta Studio for Aldus  
Products, Personal Writer  
PW10 SL, Wacom SD-420L ... 186  
*Three graphics tablets.*

Leprechaun 2.6 ..... 190  
*Color arcade-style game.*

Calculator Construction  
Set 2.06 ..... 192  
*On-screen calculator creator.*

Traveller 40Mac ..... 195  
*Removable hard disk system.*

KaleidaGraph 2.0 ..... 197  
*Plotting and analysis program.*

In/Out 1.0 ..... 199  
*Network sign-out board.*

StrataVision 3D 1.0.2 ..... 201  
*Computer-aided drawing and visualization package.*

Window Shopping ..... 203  
*Nuts & HyperBolts 2.0, MacPhotography Workshop 1.02, Hand-Off, and Complete Undelete 1.0.*



# OMNIS 5



## Look Again!

Yes, look at OMNIS 5 from Blyth Software. Omnis 5 is the only database that produces identical applications for Macintosh and IBM PC's or compatibles! You pick the development platform, your Omnis 5 application runs in both environments with the same easy graphic interface.

Today's business requires short learning curves and the high productivity of OMNIS 5. OMNIS 5's cross-platform compatibility simplifies support! One application serves all users on your mixed-platform network!

**OMNIS 5 is the development platform of the 1990's!**

For more information, call or write:

**BLYTH  
SOFTWARE**

1065 E. Hillsdale Blvd., Suite 300  
Foster City, CA 94404  
In the US 1-800-843-8615, or in  
CA 1-800-223-8050 or 415-571-0222

Circle 47 on reader service card.

## MACWORLD

Editor-in-Chief **Jerry Borrell**

### EDITORIAL

Executive Editor **David Ushijima**

Managing Editor **Charles Barrett**

Senior Editor/Features **Adrian Mello**

Editorial Manager **Jane Lagas**

Senior Associate Editor/Depts. **Deborah Branscum**

Senior Associate Editor/Lab Manager **Chip Carman**

Senior Associate Editor/Features **Joe Matazzoni**

Senior Associate Editor/East Coast **Brita Meng**

Senior Associate Editor/Reviews **Carol Person**

Senior Associate Editor/Features **Cheryl E. Spencer**

Associate Editors/News **Dan Littman, Tom Moran**

Associate Editor/Features **Suzanne Stefanac**

Associate Editor/Reviews **Liza Weiman**

Senior Production Editor **Luis A. Camus**

Senior Copy Editor **Ruth Henrich**

Assistant Editors **Cathy E. Abes,**

**Mark Hurlow, Mary Margaret Lewis**

Production Editor **Annie Jenkel**

Copy Editors **Marjorie Baer, Emily Bower,**

**Felicity O'Meara, Katherine L. Ulrich**

Production Assistant **Lisa Brazieal**

Editorial Assistant **Julian C. R. Okwu**

Editorial Administrative Assistants

**Suzanne Courteau, Lyn Taylor**

Assistant to the Editor-in-Chief **Sandy Butler**

Andrew Fluegelman Intern **Jonathan Cassell**

Contributing Editors **Nancy E. Dunn, Robert C.**

**Eckhardt, Erfert Fenton, Rob Hahn, Jim Heid, Dave Kosiur,**

**Steven Levy, David Pogue, Lon Poole, Steve Roth,**

**Charles Seiter, Franklin N. Tessler, Bruce F. Webster**

Overseas Editors **Osmund Lind Iversen, Editor,**

**Australian Macworld, tel. 02-439-5133; Peter Worlock,**

**Editor, Macworld (U.K. edition), tel. 01-831-9252**

### ART AND DESIGN

Design Director **Dennis McLeod**

Art Director **Joanne Hoffman**

Assistant Art Director **Nancy Paynter**

Designer **Leslie Barton**

Designer/Informational Graphics **Arne Hurty**

Associate Designers **Andrew Faulkner, Hae Yoon Kim**

Senior Design Associate **Tim Johnson**

Design Associate **Martha Katt**

### PRODUCTION

Director of Manufacturing **Anne Foley**

Production Manager **Claudia Dawn Smukler**

Advertising Billing Coordinator **So Fong Yip**

Advertising Traffic Coordinator **Annette Garcia**

President and Publisher

Macworld Communications, Inc. **James E. Martin**

Assistant to the President **Susan Miller**

April 1990, Volume 7, Number 4  
*Macworld* (issn 0741-8647) is published monthly by Macworld Communications, Inc., 501 Second Street, San Francisco, CA 94107. Subscription rates are \$30 for 12 issues, \$60 for 24 issues, and \$90 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$16 per year from Canada and Mexico; add \$16 per year for surface mail or \$95 per year for airmail from all other countries. Second-class postage paid at San Francisco, California, and at additional mailing offices.



# The **New** WriteNow Version 2.2.

## Still Easy. Still Fast. And Still the Right Choice...

### ...But Now For *Even More* Reasons!

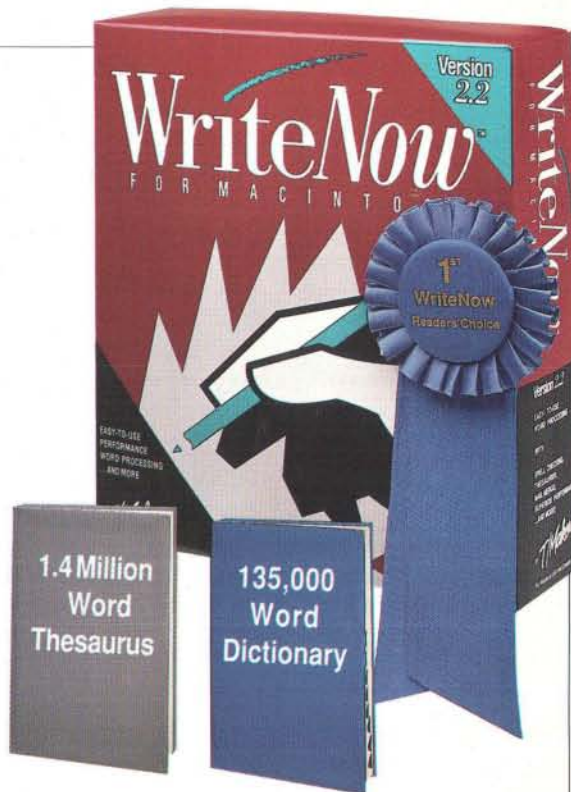
**1.4 Million-Word Thesaurus** How about 1.4 million new reasons? WriteNow now includes the Proximity WordMaster™ Thesaurus, containing 1.4 million synonyms, antonyms, compared, contrasted, and related word responses at your fingertips—it's the biggest in the Macintosh world!

**135,000-Word Spelling Checker** How about another 135,000 great new reasons? We've increased the size of our spelling checker to 135,000 words, making it the largest of any Macintosh word processor as well.

**Direct Word 3.0 and Word 4.0 Compatibility** Maybe you just need 3.0 or 4.0 good reasons? WriteNow is directly compatible with Microsoft Word 3.0 and Microsoft Word 4.0 documents.

**Over a Dozen New Features & Usability Enhancements** Or how about over a dozen new features and usability enhancements, like menu fonts, ruler guides, automatic window tiling & stacking, date formatting, powerful new format accelerators, direct input of font size, pre-designed mailing label templates for popular label sizes, and more.

**The Word Processor of Choice in the Macintosh World** Or how about just **one** really important reason: When you ask industry critics which word processor they use day-to-day, the answer is always the same: WriteNow. Still the word processor of choice in the Macintosh world.



#### Reviews

“WriteNow is the definitive Macintosh word processor. It's **easy to use, powerful, and comfortable**... Highly recommended.  
—JOHN DVORAK, INDUSTRY COLUMNIST

[WriteNow] might be **The Best Program I'd Ever Used. On any computer—it's the fastest Macintosh word processor I've ever seen.**  
—JIM SEYMOUR, MACUSER MAGAZINE

Even if WriteNow is your first Mac application, you'll be up and running in no time. We rate ease of learning **excellent**. ”  
—INFOWORLD MAGAZINE

#### Awards

1989 Editors' Choice Award,  
**'Best New Word Processor'**—MACUSER

1989 Readers' Choice Award,  
**'Best Word Processor'**—MACAZINE

**#1 Rated Word Processor in Macintosh**  
**'PC Week Poll of Corporate Satisfaction.'**  
—PC WEEK MAGAZINE

#### Comparison of Leading Word Processors

	WriteNow 2.2	MacWrite II	Word	Works
Actual disk space needed:	(2) 800K	Hard disk	Hard disk	Hard disk
Thesaurus:	1.4 million	220,000	220,000	No
Spell Checker:	135,000	100,000	130,000	60,000
Mail Merge:	Yes	Yes	Yes	Yes
Format Accelerators:	Yes	No	Yes	No
Multiple Header/Footers:	Yes	No	Yes	No
Extensive Undo:	Yes	No	No	No
Retail Price:	\$195	\$249.95	\$395	\$295

#### For more information...

Registered users will receive WriteNow 2.2 upgrade information in the mail. Nonregistered users should call or write for details.

**T/Maker Company**  
1390 Villa Street  
Mountain View, CA 94041

Tel: (415) 962-0195 Fax: (415) 962-0201

© 1990 T/Maker Company. All rights reserved. The following are registered and unregistered trademarks of the companies listed: WriteNow is a trademark of T/Maker Company; Macintosh, Apple Computer, Inc.; MacWrite, Claris Corporation; Microsoft, Microsoft Corporation; WordMaster, Franklin Computer Corporation.

See us at Macworld Expo, Booth #1217

Circle 332 on reader service card

*T/Maker.*





# Industry Challenged To Take Role In Education

## PART IV SOLUTIONS

As we have seen, the inadequacy of the U.S. labor force is reaching crisis proportions. The average literacy level of today's young adults is below the average level needed by the job market. In the next ten years, the job market will demand an ever higher level of proficiency in reading and math. Many young adults with only a high school diploma or worse, will effectively be shut out from the job market as demand for unskilled, manual labor jobs decreases. This ever growing segment of the population will become a drag on the economy due to increased unemployment.

Corporations can ill afford not to try and remedy this situation, for if they do not, they will not have a satisfactory pool of job applicants from which to choose the workers to fill the positions which will develop in the next several years. The jobs will have to be filled by unqualified, undereducated workers. This will create lower productivity and thus a lower standard of living across the board. This, of course, has worldwide implications as well, adversely affecting U.S.

### Sponsor curriculum development

As corporations assess key skills required over the next several decades, they should cooperate with high schools and junior high schools to develop programs that breed interest and proficiency in these areas. Corporations can even sponsor extracurricular activities such as science, computer or speech clubs that would reproduce real-life situations. Exposure, experience and excitement about the field can grow together.

### Reward those who graduate

Corporations can offer guaranteed part-time employment to students who agree to remain in school and pursue courses preparing them for careers in their chosen field. Students perceive an incentive to stay in school and to experience a variety of disciplines.

### Support employee involvement in school activities

Corporations should encourage executives to spend time with students in the classroom. The man-hours forfeited would be repaid many times over. For students, school becomes a more interesting environment with clear attainments to the outside world. At the same time, the company builds a close relationship with young people with roots

A stylized illustration of a young woman's face, looking directly forward. Surrounding her head are various musical instruments, including a violin, a trumpet, and a drum. The letters 'R', 'S', and 'C' are also scattered around the instruments.



The words are those of Jonathan Seybold, perhaps the most respected voice in desktop publishing. His newsletter, The Seybold Report, reaches some 200,000 publishers—of whom we estimate 199,990 have never even tried a NeXT™ Computer.

Certainly, then, Mr. Seybold's words weren't calculated to gain favor among his readers. We suspect a far simpler motive: honesty.

The NeXT machine has caused many to believe that it was designed

graphics—along with expansive libraries of fonts and art.

The NeXT Computer streamlines the entire publishing process. FrameMaker® software combines writing, graphics and layout tools in one publishing package. Which brings an end to the tradition of forever bouncing between programs, “importing” and “exporting” as you go.

And, thanks to true multitasking, you can instantly access other applications.

The NeXT Digital Library,™ for

# “THE BEST COMPUTER FOR PUBLISHING EVER MADE.”

exclusively for publishing. Not a bad theory, considering the evidence.

To begin with, the NeXT Computer is the first pure PostScript® machine. You can work on-screen with the hundreds of fonts in Adobe's type library. You can output to any PostScript device, be it laser printer, slide maker or the highest quality professional typesetter. And what you see on the display is precisely what will print.

As the rest of the industry explores ways to accomplish this feat, in a year at best, only the NeXT Computer can do it today.

In addition, the quality of the image itself is raised dramatically.

The NeXT MegaPixel Display provides a huge workspace, with sharpness and detail you haven't seen on a computer before. The NeXT Laser Printer, at 400 dots per inch, offers over 75% greater resolution than the current 300 dpi standard.

Ours is also the only system to offer optical storage as a standard feature. A single optical disk (256 megabytes) lets you store and transport multiple versions of long documents, rich in

example, is always at hand. It includes entire books, such as Webster's Ninth New Collegiate Dictionary® and Collegiate® Thesaurus. Or archives of your past work, in which you can pinpoint text or graphics in seconds, to copy into new documents.

NeXT Mail makes publishing a truly collaborative process. Unlike ordinary e-mail, it lets you send and receive messages that include text, graphics, voice, even entire documents. Never has there been a more effective way to locate information, receive comments and get approvals.

And, as Publish! magazine recently reported, the NeXT Computer “offers a staggering price advantage” when compared to personal computers configured for desktop publishing.

To receive our publishing brochure, call 800-848-NeXT. While you're on the line, ask for the location of your nearest Businessland Center. There, you can get some hands-on experience with the world's most sophisticated desktop publishing system.

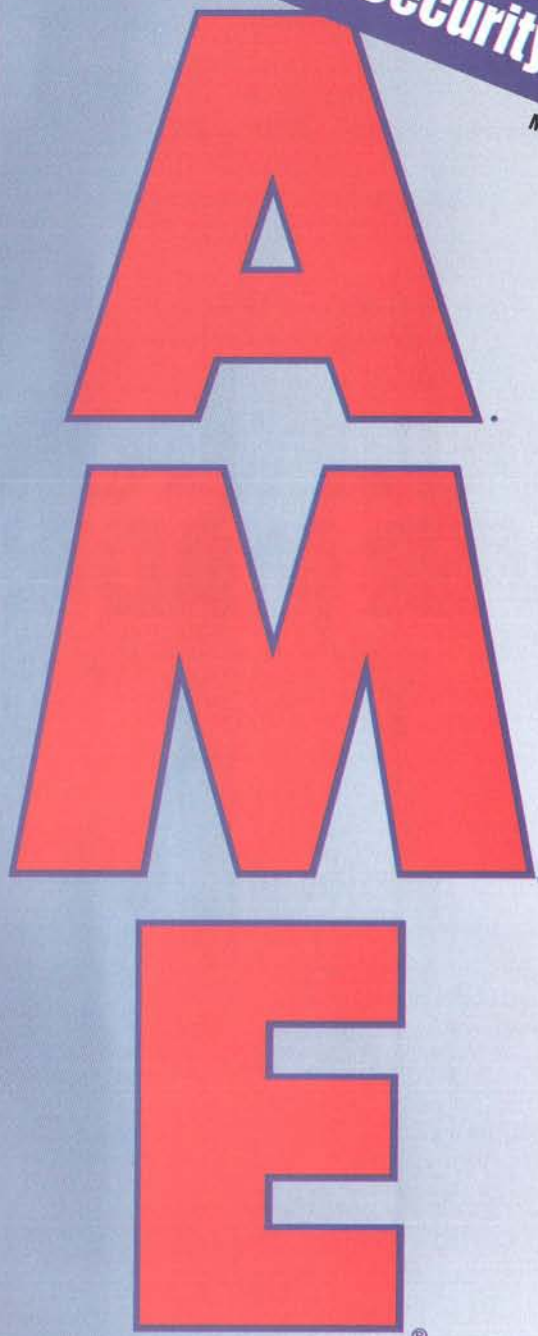
And get a quote on a system all your own.





# "A.M.E. Sets New Security Standard"

MacWEEK 1/16/90



## Security & Virus Protection

Logs software & hardware activities

Protects against illegal copying

Prevents launching of unauthorized programs

Multiple levels of Users with individual/group access controls

Specific Desk Accessory Control

Multiple encryption/password options

A.M.E. is an integrated security program. Whether your concerns are managing a confidential government project, maintaining order on a Mac™ used by many people, or just preventing your child from destroying financial records, A.M.E. has a solution for you. It runs quietly in the background and is always there to protect you. The easy-to-use interface lets you set up the Mac with just the kind of security you require.

## Access Managed Environment

Call today for a Free Brochure 800 359-4920

**Casady & Greene, Inc.**

P.O. BOX 223779 • CARMEL, CA 93922 • 408 • 624 • 8716

Circle 16 on reader service card.

## MACWORLD

### ADVERTISING SALES

Vice President/Director of Advertising Sales  
**Patricia Navone** (415/243-0505)  
 Western Advertising Manager **William P. Peck**  
 (415/243-0505)  
 Senior Account Manager/No. California (San Francisco) **Penny Rigby** (415/243-0505)  
 No. California (San Jose) **Cherie La France**  
 (415/243-0505)  
 Northwest **Regina T. Salaices** (415/978-3155)  
 Sales Associate **Danny Linden**  
 So. California **Paul Dudas** (714/250-1307)  
 Southwest, Texas **Cathi Tucker** (714/250-1307)  
 Sales Associate **Marsha Bowers**  
 Midwest **Shannon Dolan** (312/827-4477)  
 Sales Associate **Sandy Mussato**  
 Eastern Advertising Manager **Bill Thompson**  
 (201/967-1350)  
 Mid-Atlantic **Annette Bremer** (201/967-1350)  
 New England **Joan Flynn** (508/879-0700)  
 Southeast **Kathy Isaacs** (404/394-0758)  
 Telemarketing Manager **Beverly Schneider**  
 (415/243-0505)  
 Macworld Catalog **Carol Folde, Niki Stranz**  
 (415/978-3152; 415/978-3105)

Vice President/Marketing and Circulation **Dan Orum**

### MARKETING

Marketing Associate **Susan Carroll**  
 Marketing Associate **Lisa Espinoza**  
 Marketing Associate **Kimberlee Luedee**  
 Marketing Associate **Randy Schneidman**  
 (415/243-0505)

### CIRCULATION

Circulation Manager **Lindsay Davidson**  
 Fulfillment Coordinator **Evelyn Adenau**  
 Promotion Coordinator **Lori Hitchcock**  
 Circulation Assistant **Catherine Huchting**  
 Single-Copy Sales Director **George Clark**  
 Single-Copy Sales Rep **Martin Garchar**

### RESEARCH

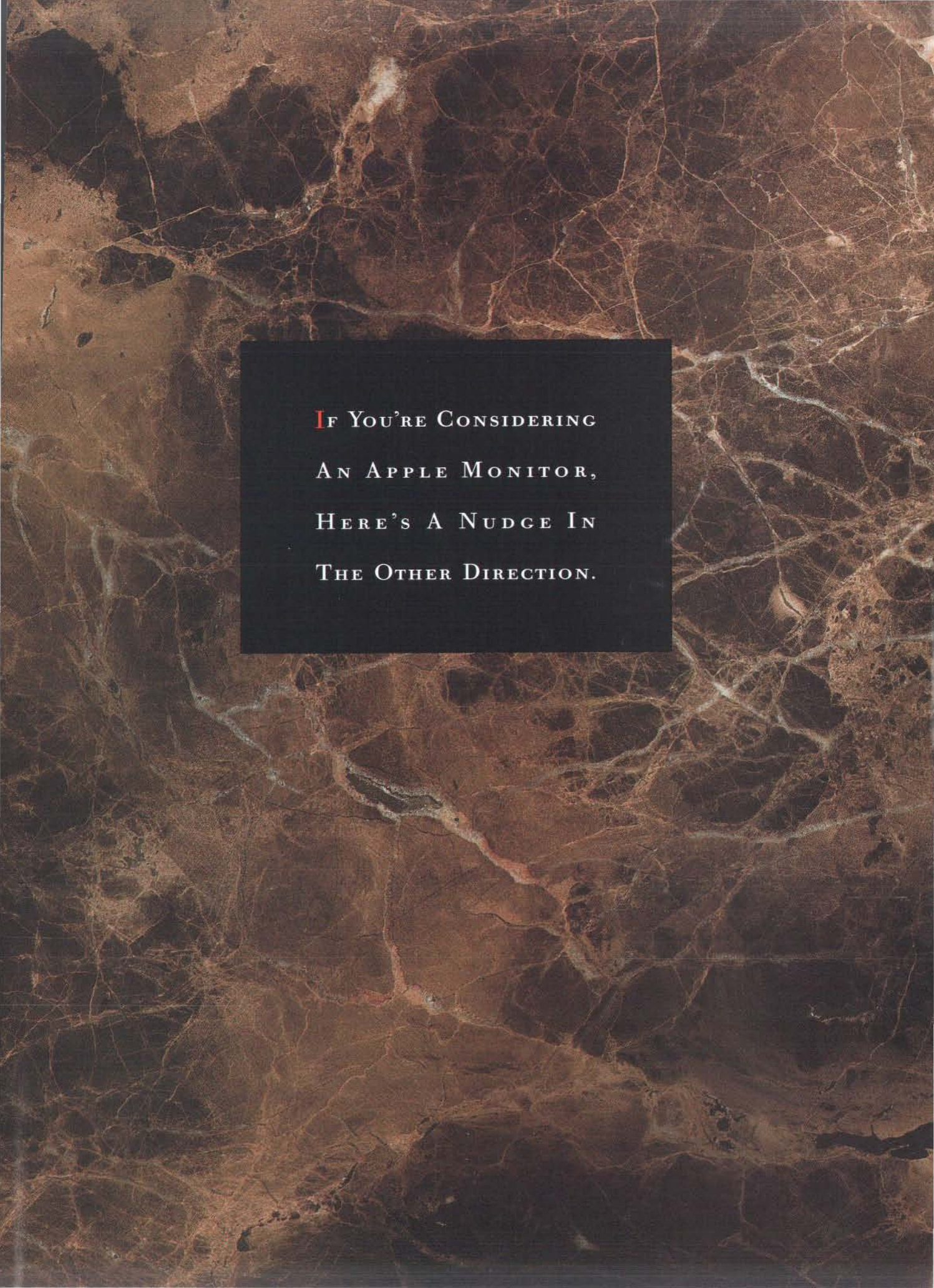
Director of Research **Gary Rocchio**  
 Project Coordinator **Guy Tasaka**

### ADMINISTRATION

Director of Finance **Vicki Peilen**  
 Corporate Business Manager **Christina W. Spence**  
 Accounting Manager **Pat Murphy**  
 Director of Human Resources **Shelly Ginethal**  
 Information Systems Manager **Walter J. Clegg**

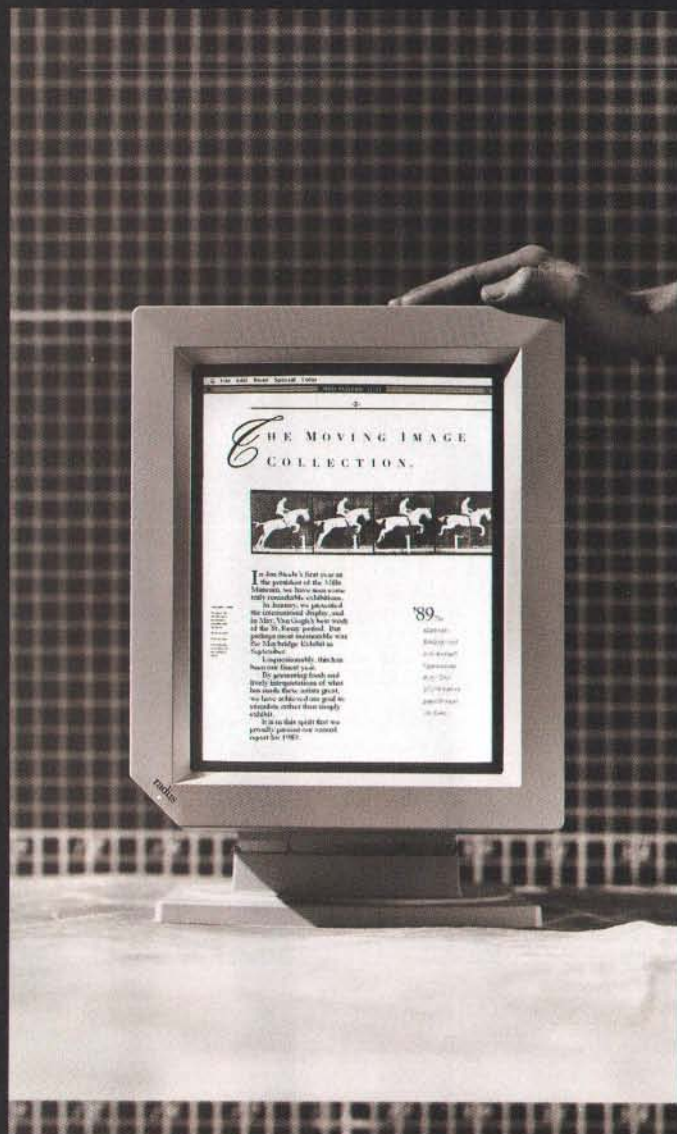
Founder **David Bunnell**  
 Founding Editor **Andrew Fluegelman** 1943-1985



The background of the entire page is a rich, dark brown marbled paper. The pattern consists of intricate, swirling veins of lighter brown and tan, creating a complex, organic texture. The lighting is slightly uneven, with darker areas in the upper left and lower right, and lighter areas in the center and upper right.

IF YOU'RE CONSIDERING  
AN APPLE MONITOR,  
HERE'S A NUDGE IN  
THE OTHER DIRECTION.





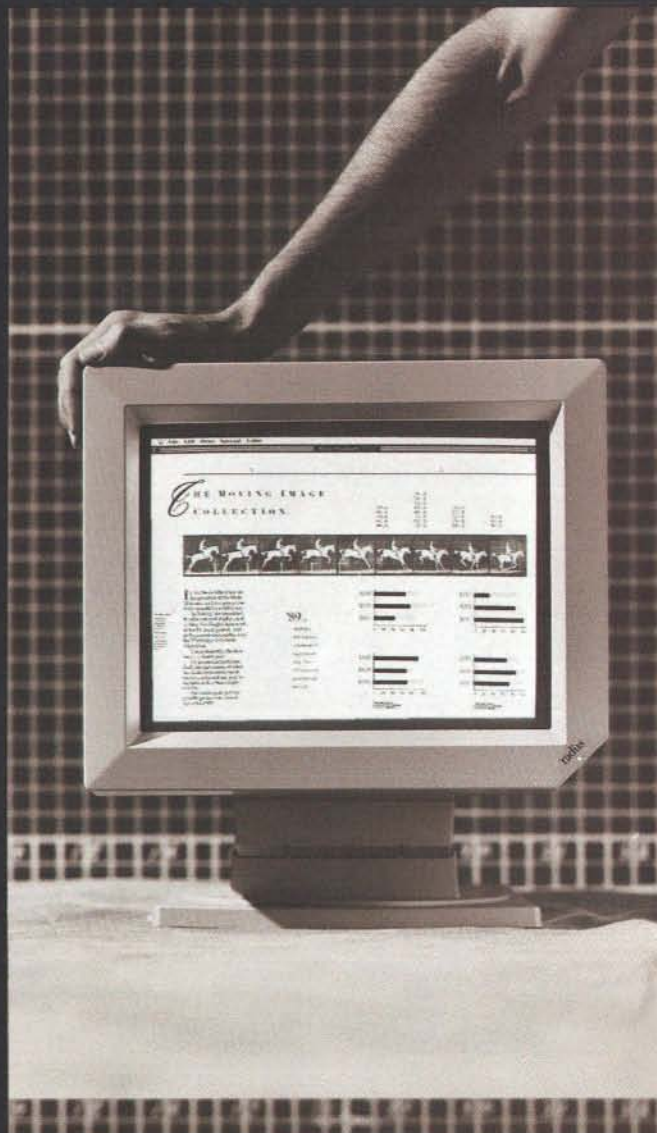
Once again, Radius turns display technology on its ear. Introducing Pivot,<sup>TM</sup> the first display that goes from portrait to landscape with only a gentle push. ● The new Pivot is the first display that changes orientation, in real time,

to match the format of your project. For example, when you're writing a manuscript, you can see a full page in portrait position. And when you switch to spreadsheets, you can rotate Pivot to view all twelve months. ● Four



# radius

\*If you live outside the United States, call 408-434-1010 for the name of a Radius International Distributor.  
© 1990 Radius Inc. Radius, the Radius logo, and Radius Pivot Display are trademarks or registered trademarks of Radius Inc.



levels of gray are furnished, with upgrades to

16 levels for near-photographic quality images.

Ideal for graphic design and desktop pub-

lishing. ● Pivot is compatible with virtually

every Macintosh application and may be used

with either the SE/30 or Macintosh II family.

● To find your nearby Radius reseller,

phone 1-800-227-2795\*. Then, before you buy

a display for your Macintosh, check out another

amazing way to look at things from Radius.

Circle 46 on reader service card



# You could have turned a \$50,499 investment into \$2,520,603 in 5 years with our Index Program.

Purchase Type	Date	Quat	Furch Price	Furch	Comm	Cost	Sell Date	Sell Price	Comm	Today's Value	P/L
Puts	12/28/84	100	\$3.90			\$30,209.25	01/09/85	\$4.25	\$226.25	\$42,226.75	\$12,064.50
Calls	01/29/85	100	\$4.38		\$230.00	\$43,900.00	02/11/85	\$5.63	\$267.50	\$55,982.50	\$12,082.50
Puts	03/12/85	100	\$2.88		\$209.25	\$28,959.25	03/19/85	\$4.00	\$218.75	\$39,781.25	\$10,822.00
Calls	04/26/85	100	\$3.50		\$209.25	\$35,209.25	05/20/85	\$6.75	\$301.25	\$67,198.75	\$31,989.50
Calls	06/26/85	100	\$2.38		\$209.25	\$23,959.25	07/01/85	\$3.13	\$209.25	\$31,040.75	\$7,081.50
Calls	07/18/85	100	\$5.00		\$249.75	\$58,248.75	07/13/85	\$3.75	\$211.25	\$37,298.75	(\$21,960.00)
Puts	08/13/85	100	\$3.25		\$209.25	\$32,709.25	08/26/85	\$2.75	\$209.25	\$27,290.75	(\$5,418.50)
Puts	09/16/85	100	\$2.25		\$209.25	\$22,709.25	09/26/85	\$2.50	\$209.25	\$24,790.75	\$2,081.50
Calls	11/05/85	100	\$4.88		\$249.00	\$48,995.00	12/18/85	\$19.63	\$687.50	\$195,562.50	\$146,567.50
Calls	01/27/86	100	\$3.25		\$209.25	\$32,709.25	03/04/86	\$10.88	\$425.00	\$108,325.00	\$75,615.75
Calls	03/12/86	100	\$4.75		\$241.25	\$47,741.25	04/29/86	\$9.63	\$387.50	\$95,862.50	\$48,121.25
Calls	05/21/86	100	\$4.50		\$223.75	\$45,223.75	06/09/86	\$2.50	\$209.25	\$37,108.75	\$18,115.00
Calls	08/06/86	100	\$4.13		\$222.50	\$41,472.50	09/05/86	\$12.75	\$481.25	\$127,018.75	\$85,546.25
Calls	09/17/86	100	\$4.50		\$223.75	\$45,223.75	11/13/86	\$6.88	\$305.00	\$68,445.00	\$23,221.25
Calls	11/25/86	100	\$4.13		\$222.50	\$41,472.50	12/19/86	\$4.88	\$245.00	\$48,505.00	\$7,032.50
Puts	01/02/87	100	\$2.38		\$209.25	\$23,959.25	01/05/87	\$1.00	\$209.25	\$23,790.75	(\$16,168.50)
Calls	01/08/87	100	\$6.75		\$301.25	\$67,801.25	03/03/87	\$29.63	\$987.50	\$295,262.50	\$227,461.25
Calls	03/05/87	100	\$2.50		\$209.25	\$23,959.25	03/12/87	\$2.94	\$209.25	\$29,165.75	\$6,206.50
Calls	03/20/87	100	\$4.75		\$341.25	\$47,741.25	04/07/87	\$8.25	\$346.25	\$82,153.75	\$34,412.50
Calls	05/06/87	100	\$3.75		\$211.25	\$37,711.25	05/08/87	\$2.25	\$209.25	\$32,290.75	(\$5,420.50)
Puts	05/19/87	100	\$4.88		\$249.00	\$48,995.00	05/21/87	\$7.50	\$329.25	\$74,676.25	\$25,681.25
Calls	06/17/87	100	\$4.25		\$226.25	\$42,726.25	07/16/87	\$8.25	\$346.25	\$82,153.75	\$39,427.50
Calls	07/31/87	100	\$3.13		\$209.25	\$31,459.25	08/06/87	\$5.00	\$346.25	\$69,751.25	\$38,292.00
Calls	08/10/87	100	\$5.88		\$275.00	\$59,625.00	08/26/87	\$13.69	\$509.43	\$136,390.55	\$77,765.55
Puts	09/09/87	100	\$4.38		\$303.00	\$43,980.00	09/10/87	\$3.63	\$209.25	\$36,040.75	(\$7,939.25)
Puts	10/08/87	100	\$7.75		\$330.13	\$77,803.13	10/20/87	\$97.00	\$1,757.50	\$967,242.50	\$889,439.37
Puts	11/10/87	100	\$5.88		\$248.75	\$58,248.75	11/11/87	\$5.69	\$269.25	\$56,605.63	\$6,356.88
Calls	11/13/87	100	\$3.50		\$223.75	\$35,203.75	11/24/87	\$2.38	\$209.25	\$23,540.75	(\$11,663.00)
Calls	12/15/87	100	\$3.13		\$209.25	\$31,459.25	12/24/87	\$8.50	\$353.75	\$84,646.25	\$53,187.00
Calls	02/11/88	100	\$2.25		\$209.25	\$22,709.25	03/17/88	\$7.63	\$327.50	\$75,922.50	\$53,213.25
Puts	03/25/88	100	\$3.38		\$209.25	\$33,959.25	04/05/88	\$5.63	\$267.50	\$55,982.50	\$22,023.25
Calls	05/16/88	100	\$4.63		\$227.50	\$46,487.50	05/16/88	\$5.25	\$256.25	\$52,243.75	\$5,756.25
Calls	05/28/88	100	\$4.25		\$226.25	\$42,726.25	06/27/88	\$15.00	\$548.75	\$149,451.25	\$106,725.00
Calls	08/01/88	100	\$4.00		\$218.75	\$40,218.75	08/05/88	\$2.63	\$209.25	\$26,040.75	(\$14,178.00)
Puts	08/10/88	100	\$4.00		\$218.75	\$40,218.75	08/24/88	\$7.38	\$320.00	\$73,430.00	\$33,211.25
Puts	10/05/88	100	\$3.25		\$209.25	\$32,709.25	10/10/88	\$2.00	\$209.25	\$19,790.75	(\$12,918.50)
Calls	10/18/88	100	\$5.50		\$263.75	\$55,263.75	10/22/88	\$9.50	\$383.75	\$94,616.25	\$39,352.50
Calls	01/09/89	100	\$7.13		\$312.50	\$71,562.50	02/09/89	\$18.00	\$638.75	\$179,361.25	\$107,798.75
Calls	02/17/89	100	\$6.25		\$286.25	\$62,786.25	02/23/89	\$5.25	\$256.25	\$52,243.75	(\$10,542.50)
Puts	02/23/89	100	\$3.75		\$211.25	\$37,711.25	03/02/89	\$4.88	\$245.00	\$48,505.00	\$10,792.75
Calls	03/06/89	100	\$5.63		\$267.50	\$56,517.50	03/19/89	\$8.38	\$350.00	\$83,400.00	\$26,882.50
Calls	03/29/89	100	\$6.38		\$290.00	\$64,040.00	05/02/89	\$10.75	\$421.25	\$107,078.75	\$43,038.75
Puts	05/10/89	100	\$2.63		\$209.25	\$26,459.25	05/12/89	\$1.75	\$209.25	\$17,390.75	(\$9,068.50)
Calls	07/06/89	100	\$5.75		\$271.25	\$57,771.25	08/14/89	\$25.00	\$673.25	\$249,326.75	\$191,555.50
Calls	08/24/89	100	\$3.63		\$209.25	\$36,459.25	09/25/89	\$8.13	\$342.50	\$80,397.50	\$44,448.25
Calls	09/28/89	100	\$4.13		\$222.50	\$41,472.50	10/09/89	\$11.25	\$436.25	\$112,063.75	\$70,591.25
											\$2,520,603.00

**76.09% Accurate:** Above is a chart of actual OEX trades from December 28, 1984 to October 9, 1989, based on the signals generated by the **Right Time-Index Program™**. By following the signals generated by the program, the rules in the manual and starting with just a small amount of capital (\$50,000) your profits would have been over \$2,500,000.00.

The **Right Time™** computerized trading system was developed by an expert portfolio manager for his own personal use. Over the last nine years of in-market use the software has been perfected and made easy to use. Now it's available for any smart trader who wants to make quick profits from quick decisions. Just look at the profits generated in the above chart!

Not only is **The Right Time™** the best decision support system ever devised for traders, it's the **only** software that analyzes volume/price, support/demand, and global market trends - all at the same time.

## Amazingly Precise.

The **Right Time™** programs run on IBM (and compatible), Apple II and Macintosh personal computers. The software is easy to use, amazingly precise, and very, very clear in its signals.

You can retrieve and update signals for your stocks, commodities, indices or funds from Dow Jones, Warner, Signal, DBC or the Radio Exchange in less than five minutes per day. What's more, you can play "What If?" games and have results in about one second.

## Results: Winning Trades.

There are seven **Right Time™** programs available to help you make the right decisions at the right time.

**Stock Program:** "The program is amazing. Profitable trades have developed out of nowhere!" M.C., brokerage firm vice president.

**Index Program:** "Computer whiz finds program for success. This program really works." A.G. columnist.

**Futures Program:** "Very profitable with four out of five winners. Paid for itself the first trade." B.L., advisor.

**Mutual Funds Program:** "Accurately picked my last seven profitable trades. I couldn't trade without it." L.S., individual investor.

**Stock Program/Long Term:** "Exactly what I've been waiting for from T.B.S.P. Perfect for our more conservative clients." G.M., stockbroker.

**Day Trading Program/Index and Futures:** "The Day Trading Programs are sensational." P.S., investor.

## For More Information.

Call (714) 548-2874 or write for our free twenty page brochure. Each of our end-of-day programs costs \$499, any two \$899, any three \$1299, any four \$1599 or all five for just \$1899. Demonstration programs are available for \$59 (each) - includes manual.

Our Day Trading Programs are priced at \$999 each or both for \$1799.



**T.B.S.P. INC.**

The Better Software People  
620 Avocado Ave.  
Corona Del Mar, CA 92625  
(714) 548-2874

© T.B.S.P. Inc. 1990

Hours: 9am - 5pm M-F Pacific Time

Circle 153 on reader service card.

# MACWORLD

## HOW TO CONTACT MACWORLD

### Subscription Services

For subscription service questions, call 800/234-1038, 800/525-0643, or 303/447-9330, or write Subscriber Services, P.O. Box 54529, Boulder, CO 80322-4529. To place new orders, call 800/288-6848.

### Macworld in Microform

Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346, 313/761-4700.

### Back Issues of Macworld

Write to: Back Issues of Macworld, 144 Townsend St., San Francisco, CA 94107; \$6 per issue (\$20 overseas). Prepayment in U.S. funds necessary.

### Macworld Editorial

Mail or Courier: Macworld Communications, Editorial Dept., 5th floor, 501 Second St., San Francisco, CA 94107; 415/243-0505.

AppleLink: Macworld1 Connect: Macworld1 CompuServe: 70370, 702 Fax: 415/442-0766

**Letters to the Editor** All your written comments, questions, and suggestions regarding any aspect of the magazine are read by our editor. We reserve the right to edit all submissions; letters must include your name and address. Direct all correspondence (by mail or electronically) to: Letters to the Editor.

**Questions and Quick Tips** Direct questions or tips on how to use Mac computers, peripherals, or software (by mail or electronically) to: Quick Tips, Lon Poole.

**Consumer Advocate** Been burned? Really steamed? Direct your concerns (by mail or electronically) to: Conspicuous Consumer, Deborah Branscum.

**New Products and Updates** Direct press releases and product announcements (by mail or electronically), and shrink-wrapped software upgrades (by mail or courier) to: New Products Editor.

**Editorial Calendars** For a copy of Macworld's editorial calendar, direct requests (by mail) to: General Information, Editorial Dept.

**Reprints and Permissions** For written permission to quote or reproduce material from Macworld, direct requests (by mail) to: Reprints and Permissions, Editorial Dept.

**Writing for Macworld** Please do not send us unsolicited manuscripts. If you're interested in writing for Macworld, send a stamped, self-addressed envelope along with a request for our writer's guidelines. Direct (by mail) to: Writer's Guidelines, Editorial Dept.

POSTMASTER: Send address changes to Macworld, P.O. Box 54529, Boulder, CO 80323-4529. For dealer inquiries, call 800/621-5461, in California 800/521-8455. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505. Macworld is a publication of Macworld Communications, Inc. Macworld is an independent journal not affiliated with Apple Computer, Inc. APPLE, the APPLE LOGO, MAC, MACINTOSH, and MACWORLD are registered trademarks and MACLETTER is a trademark of Apple Computer, Inc. Printed in the United States of America. Copyright 1990 Macworld Communications, Inc. All rights reserved. Macworld is a member of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 120 computer publications in more than 40 major countries. Fourteen million people read one or more IDG Communications publications each month.







*Shiva*

*NetModem™*

V.32

# It's Going Where No High-Speed Modem Has Gone Before.

There's nothing more advanced for Macintosh networks than the new high-speed NetModem V.32. Because the NetModem V.32 pushes performance to the limit. Just plug one into your network and every connected Mac can communicate at any speed up to a sizzling 9,600 bps with full V.32 compatibility. The NetModem V.32 is easy to use, even if you've never seen a modem before, with menubar 'LEDs' and familiar modem sounds fed back to your Mac as your call progresses. It's also economical, saving the expense of a dedicated Mac, multiple modems and extra phone lines – not to mention excessive telephone and online charges.

<b>SPEED</b>	⚡ ⚡ ⚡ ⚡ ⚡
<b>NETWORK SHARING</b>	⚡ ⚡ ⚡ ⚡ ⚡
<b>REMOTE BRIDGING</b>	⚡ ⚡ ⚡ ⚡ ⚡
<b>EASE OF USE</b>	⚡ ⚡ ⚡ ⚡ ⚡
<b>DIAL-IN NETWORK ACCESS</b>	⚡ ⚡ ⚡ ⚡ ⚡

It even lets you dial in to your network from a remote site to access files, use TOPS®, AppleShare®, E-mail®, printers or any other network resource. And it lets any Mac on your network access a remote network thousands of miles away, creating a powerful, high-speed wide-area internetwork. The Hayes-compatible NetModem V.32 comes with Internet Manager software that lets you create network zones, control traffic, restrict access between zones – even check the location and status of every device in the system. The NetModem V.32 is setting a whole new standard. For more information, call Shiva at **1-800-458-3550**.

*NetModem™ V.32*  
*by Shiva*

***We're Putting Networks To Work®***

155 Second St., Cambridge, MA 02141

All product names are trademarks of their respective manufacturers.



# Wanted For Murphy

According to Murphy's Law, if a floppy disk can fail, it will. Usually after you put a 90-page document on it.

That's why you should use 3M diskettes. They're built to make things go right for a change. With our

exclusive formulation and Mark Q Manufacturing Process, they break Murphy's Law millions of times a day. Year in and year out.

And our engineers have taken the same fanatic approach with all our



# er Breaking y's Law.



data storage products: diskettes, data cartridge tapes, computer tapes and optical disks. So when you get

down to it, there are only two choices.

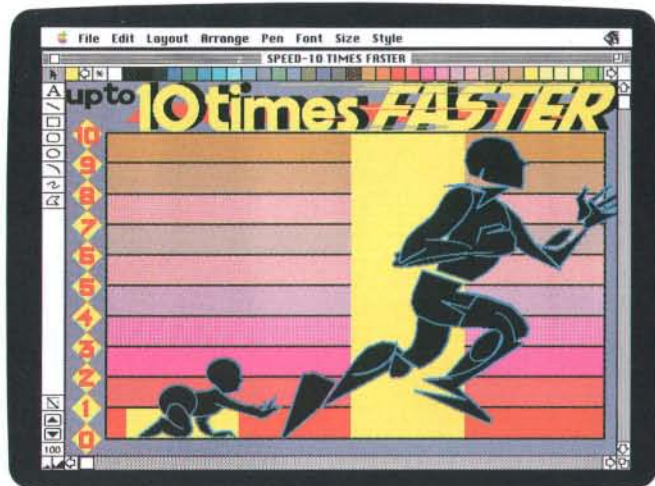
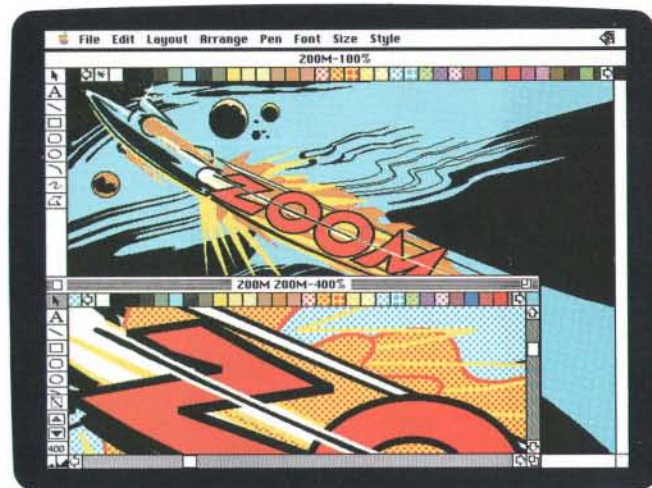
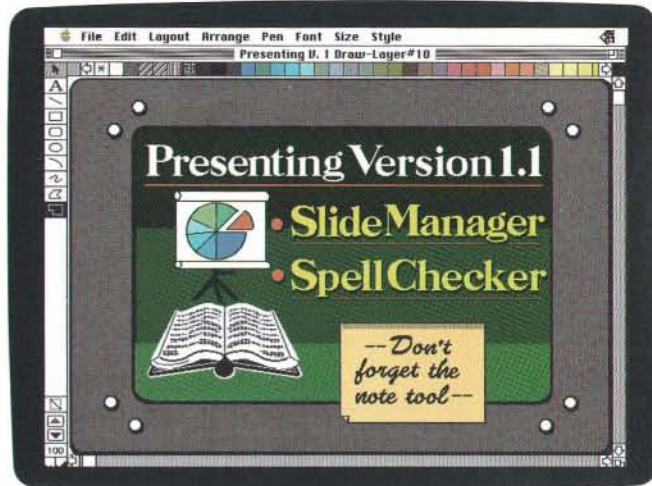
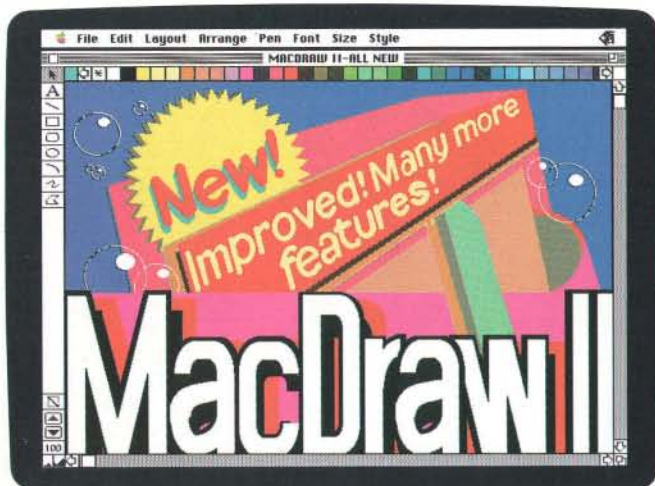
Use 3M diskettes and break Murphy's Law every day of the week. Or use something else. And give Murphy's Law a chance to break you.

For more information about diskettes, call 1-800-888-1889, ext. 10.

Circle 402 on reader service card

**3M**





Nobody reads legal type, either. But try convincing our lawyers of that. © 1989 Claris Corporation. All rights reserved, 5201 Patrick Henry Dr., Santa Clara, CA 408-987-7000. Claris is a trademark and MacDraw is a registered trademark of Claris Corporation. For the location of the nearest Claris dealer, call 408-727-8227. In Canada, call 800-668-8948.

Nobody reads copy anyway. MacDraw® II.

Circle 496 on reader service card

CLARIS®



---



---

# MACBULLETIN

## **Adobe Wins Font Copyright**

Adobe has won the copyright for a font based on its being an executable program that runs under PostScript, marking the first time the U.S. Copyright Office has acknowledged that a digital font can be a program. According to Adobe president John Warnock, U.S. law does not recognize font design as intellectual property, which prevents font designers from copyrighting fonts. But computer programs are protected. Warnock was uncertain how the changes would affect pricing and licensing arrangements for fonts.

## **Aldus Likely to Acquire Silicon Beach**

At press time, Aldus representatives were in San Diego poring over Silicon Beach's books after the two companies signed a letter of intent for Aldus to acquire Silicon Beach. Representatives of both companies refused to comment on the future of Silicon Beach's products, which include SuperPaint, Super3D, Digital Darkroom, Dark Castle, and SuperCard, but Aldus has long been rumored to be interested in a low-end page-layout program, and Silicon Beach was about to ship its \$299 Personal Press.

## **Bon Mot about Word 4.0 Bug**

Microsoft has just released Word version 4.0a to address problems with Word's management of imported PICT files; a bug occasionally corrupts PICT objects copied from Word back into their creating applications. The problem affects SuperPaint files (SuperPaint is bundled with Word); expressions created with Prescience Corporation's mathematical typography package, Expressionist; and possibly other applications. Version 4.0a also fixes a bug in Word's Calculate command. The upgrade is free to registered owners who require it. Contact Microsoft support at 206/454-2030.

## **SoftPC Adds Soft Peripherals**

Insignia Solutions is upgrading SoftPC to emulate an IBM AT-class machine entirely in memory. SoftPC's EGA/AT Option Pack, which lists for \$199, also emulates an EGA video board, an 80287 math coprocessor, and a LIM board for expanded memory. The new version requires a Mac II-family machine or an SE/30. For more information, contact Insignia Solutions at 408/522-7600.

## **TypeStyler Goes Type 1**

Brøderbund has announced TypeStyler version 1.01, which applies TypeStyler effects to Adobe Type 1 fonts. Brøderbund is testing Type 1 fonts from other

vendors as well. Version 1.0 could use only Type 3 fonts. The new version uses tools licensed from Pipeline Associates to convert Adobe Type 1 fonts to a format that TypeStyler can convert to SmoothFonts. The upgrade will be free to registered users who contact Brøderbund at 415/492-3200.

## **1stAid Abandons Virus Defenses**

Anti-Virus Kit will no longer be upgraded to combat new computer viruses. 1stAid Software has written to all registered owners to explain its decision, calling the new virus WDEF a "second generation" virus designed to escape detection, and saying that without virus control in hardware, WDEF will spawn an "endless cycle of response/counter-response," like the battles over copy protection, as virus writers try to evade virus-detection programs.

## **Radius Shows 21-Inch Gray-Scale Monitor**

Radius recently unveiled its TPD/21, a 21-inch monitor that can display two full pages of a document side by side. Compatible with both the Macintosh family and the IBM PC/AT and its equivalents, the TPD/21 provides either monochrome or 8-bit gray-scale display, depending on the controller board used with it. For the Macintosh, the monitor's resolution is 1152 by 882 pixels, or 74 pixels per inch. Its refresh rate is 71Hz. The TPD/21 is compatible with other Radius products, including the PrecisionColor Calibrator (works in gray-scale only), the Radius GS/C Interface, the TPD Interface, and Radius accelerators. The monitor is available now at a suggested list price of \$1795, which includes RadiusWare software. Radius also reduced the list price of its Macintosh TPD Interface by \$100, to \$595. For more information, call Radius at 408/434-1010.

## **Adding Color Vision**

Digital Vision has begun shipping a color version of its ComputerEyes video digitizer for the Mac II series. Called the ComputerEyes Professional Series, the digitizer can capture either 8-bit or 24-bit images generated by any standard NTSC video source, including S-video frames from Hi-8 or Super VHS machines. The ComputerEyes Professional Series is a single NuBus board with a list price of \$449.95, including software. For more information, call Digital Vision at 617/329-5400.

## **MicroNet Offers DAT Tape, Erasable Optical Drive**

Two high-capacity storage subsystems for the Mac, a *(continues)*



1.3GB DAT drive and a 600MB erasable optical drive, have recently begun shipping from MicroNet Technology. The DAT drive comes in a 5¼-inch form factor and includes a SCSI controller. Called the Micro/DAT, it has an average access time of 20 seconds and retails for \$4295. The erasable optical drive, based on a Sony device, stores 300MB on each side of a single optical disk. Also equipped with a SCSI port, the Micro/Optical has an average access time of 95ms and a data-transfer rate of 7.4 megabits per second. The Micro/Optical drive retails for \$5295. For more information, call MicroNet at 714/837-6033.

### **Claris Takes Wingz**

Claris has acquired access to core technology underlying the Wingz graphical spreadsheet that could fill in gaps in the Claris product line. Wingz has several capabilities that Claris could develop as separate applications or incorporate into its other applications, including 3-D graphing, the high-level programming language HyperScript, the spreadsheet engine, and SQL hooks for communicating with host minicomputer and mainframe databases. Claris officials declined to comment on their plans.

### **MitemView to Support 3270 Emulation**

MitemView, a set of tools for building HyperCard front ends that enable Macs to communicate with minicomputers and mainframes, has two new "personality" modules. One supports Tri-Data's Netway gateways, which use a networked Mac to emulate a 3270 cluster controller; and the other supports the Avatar MacMainframe, a board that makes individual Macs appear as 3270 terminals to the mainframe. The MitemView 3270 modules list for \$495 each and require MitemView at \$995. Mitem has also announced a Tandem 6530 module at \$495. For more information, contact Mitem at 408/559-8801.

### **MultiClip 2.0 in Development**

At press time, Olduvai's Clipboard-and-Scrapbook-enhancement utility, MultiClip 2.0, had just gone into beta testing. The new version adds support for naming and printing individual ClipFrames; pasting ClipFrames from a pop-up menu without opening MultiClip; and 32-bit color. Olduvai says the new MultiClip is faster, offers improved window management under MultiFinder, and sports a simplified interface. List price remains \$99. For more information, call Olduvai at 305/665-4665.

### **A Shell for Plugging Holes**

Abbott Systems is developing a utility that runs special functions inside any application. For example, a list-sorter that sorts a column of names in a spreadsheet or a page-layout document, and a case-changer that corrects capitalization in a downloaded text file. An INIT launches the functions, which are similar to XCMDs. Abbott Systems will ship the still-unnamed product with a collection of functions and provide tools for third-party developers to write more. Com-

pany president Ken Abbott said pricing would be in the utility product range: "between \$50 and \$150." For more information, call 914/747-3116.

### **Faxgate Turns Macs Into Fax Servers**

Solutions' Faxgate integrates E-mail with sending and receiving faxes over most Mac-compatible fax modems. Faxgate adds fax-serving capability to an E-mail server, intercepting outgoing E-mail messages, converting them to Group 3 fax format, and sending them out via fax modem. Incoming faxes are sent as E-mail messages to the recipient. Solutions is shipping a Microsoft Mail 2.0-compatible version and expects to add QuickMail compatibility in April. Faxgate lists for \$395 and requires Solutions' BackFax software at \$245. Faxgate includes five copies of MailMaker, an E-mail document-exchange utility like Solutions' SuperGlue. For more information, contact Solutions at 802/865-9220.

### **Liberty Ships Small 200MB Hard Disk**

Liberty Systems is shipping a 200MB external hard disk that weighs 3 pounds and measures only 2 by 5 by 7 inches. Called the Liberty 200R, the \$1699 hard disk uses an 18ms Rodime mechanism and is internally terminated. An optional \$50 international power supply, which fits inside the case, works with power lines that provide from 90 to 300 volts and functions as a surge protector with U.S. voltages. For more information, call Liberty at 408/983-1127.

### **Varityper Builds PostScript Offerings**

Varityper is shipping its modular Series 4000 PostScript imagesetter controllers, which can output to a 600-dpi plain-paper device or to 72-pica or 108-pica film devices at resolutions up to 3048 dpi. Varityper is also releasing Adobe PostScript fonts for its imagesetters and is converting its own type library to Type 1 format. For more information, contact Varityper at 201/887-8000.

### **RasterOps Announces TV Board, Introductory Offer**

RasterOps recently announced the ColorBoard 364, which combines the capability of its 24-bit ColorBoard 264 graphics adapter with additional video features. The ColorBoard 364 accepts 24-bit color video input from any NTSC source and displays it in real time. The board can function as a frame grabber, sending digitized PICT files to disk at a rate of 30 frames per second. RasterOps is working on connections to HyperCard and SuperCard, and will provide add-on external hardware that will act as a TV tuner and cable TV connector. The introductory price of the ColorBoard 364 will be \$1500 until April 1, at which time the price will rise to \$1995.

The company also introduced the ColorBoard 208, an 8-bit version of its 24-bit ColorBoard 264, that can be upgraded to 24-bit color by adding one megabyte of video RAM. The ColorBoard 208, available now, lists for \$495. The upgrade will list for about \$400 from RasterOps, but users can also buy the VRAM from third parties. For more information, contact RasterOps at 408/562-4200. ■



# Announcing The

# Grappler<sup>®</sup> LX

Laser/24 Pin Printer Solution



- ✓ Leaves hair silky and bouncy
- ✓ Contains 100% oat bran
- ✓ A premium performance printer interface
- ✓ Cholesterol free
- ✓ Leaves no sticky film
- ✓ High speed, microprocessor driven, attractively priced

O.K. so it won't do all of the above, but it is new and improved, and it will let you use the printer you want with your Macintosh™. Announcing the *Grappler LX*, the latest advance in Macintosh printer interfacing! Over the past 9 years, the Grappler name has been synonymous with innovation and excellence. This tradition has now created the pinnacle of Macintosh printer compatibility and performance.

#### Faster Print Speed

We've optimized the speed and efficiency of the *Grappler LX* to insure that you get peak performance from your laser, inkjet, or 24 pin dot matrix printer. The *Grappler LX* adjusts to the printer in use to provide the best possible output in the least possible time.

#### Includes Free AutoInstaller!

To ensure quick, trouble-free installation, the *Grappler LX* includes a new AutoInstaller. Just point and click, and the *Grappler LX* will be ready to print from any Macintosh Plus, SE, SE/30, II, IIx, IIcx or IIfx computer.

#### Enhanced Printer Compatibility

The *Grappler LX* provides you with the freedom to choose which printer is used on your Macintosh. The *Grappler LX* supports any HP®-compatible laser printer, DeskJet™ or DeskJet Plus™, even Epson®-compatible 24 pin dot matrix printers! With virtually all printer technologies supported, the *Grappler LX* can serve you every interfacing need!

Grappler and Alphabits are trademarks of Orange Micro, Inc.; Macintosh and AppleTalk are trademarks of Apple Computer, Inc.; DeskJet and DeskJet Plus are trademarks of The Hewlett-Packard Co.; Adobe Type Manager is a trademark of Adobe Systems, Inc.



#### More Fantastic Fonts!

The *Grappler LX* includes five standard fonts. You'll be able to enhance documents and clarify correspondence with new emphasis and flair. You can now use Swiss, Courier, Dutch, Garamond, and Zapf Chancery Medium Italic in a variety of sizes. For large outline fonts of any style, use Adobe Type Manager™ (ATM) which is fully compatible with the *Grappler LX*.

#### Other Orange Micro Printer Products

The *Grappler 9 Pin* provides owners of Epson-compatible dot matrix printers a cost-effective method of printing directly from the Macintosh. The *Grappler Spooler* lets *Grappler 9 Pin* and ImageWriter owners work while printing. For economy-minded Hewlett-Packard LaserJet and DeskJet Plus owners, the *Grappler LS* provides Macintosh printer compatibility. For additional fonts, try *AlphaBits*, a collection of seven popular typefaces.

With nearly 1 million Apple printer interfaces sold, Orange Micro sets the pace in compatibility solutions. Call a local Apple Authorized dealer or Orange Micro today to receive additional information or to order the *Grappler LX*.



"10 Years of Innovation and Excellence"

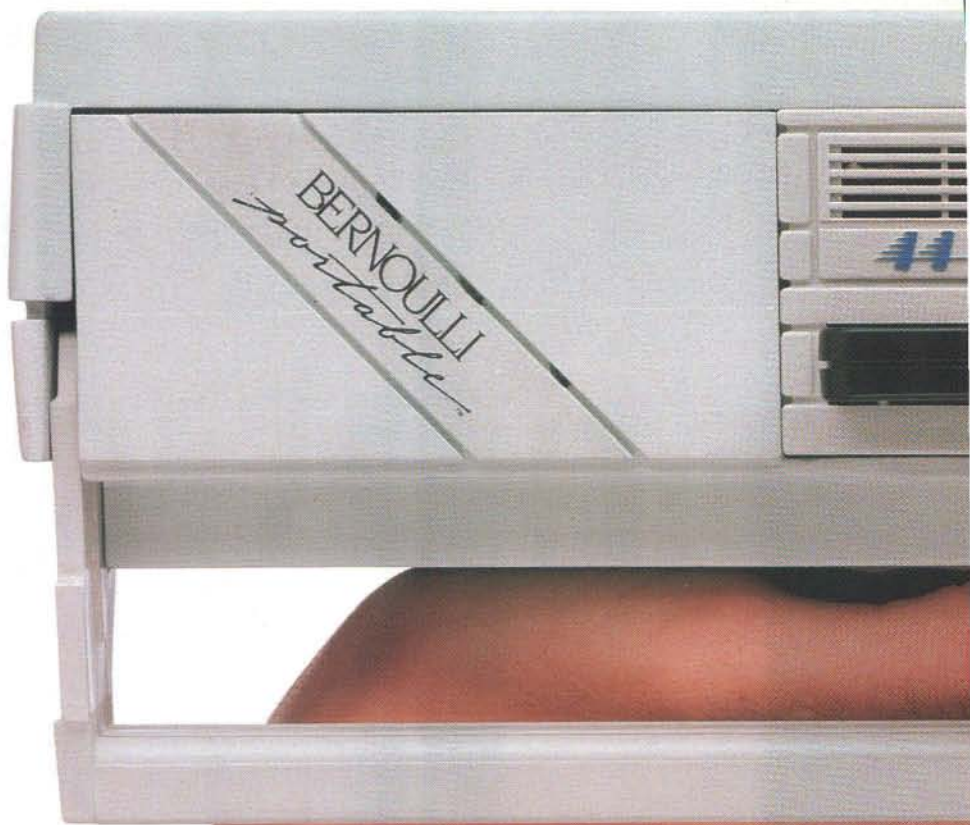
1400 N. Lakeview Ave., Anaheim, CA 92807  
(800) 223-8029, in CA (714) 779-2772

©Orange Micro, Inc., 1989

Circle 108 on reader service card



# THE NEW BERNOULLI SECURITY FOR YOUR DATA



**BERNOULLI**  
MEANS SECURITY  
FOR YOUR DATA™

The portable  
computing  
world isn't  
very forgiv-

ing. The moment you grab  
your portable computer  
and walk out the door,  
your data is at risk. One  
bump. One wrong  
step. One clever  
thief. And your  
valuable data  
could be gone  
forever. But  
thanks to

the rugged, removable  
design of the new Bernoulli  
Portable 44 for Macintosh®,  
you'll never have to face that  
prospect.

Engineered for the new Apple®  
Macintosh Portable, the light-  
weight, battery-powered Bernoulli  
Portable protects data from the  
shakes and jolts inherent in travel.  
Unlike hard disks, patented Bernoulli  
Technology® makes the Bernoulli  
Portable virtually head-crash free. And  
44MB removable Bernoulli Disks can with-  
stand shocks of 1000Gs without data loss.

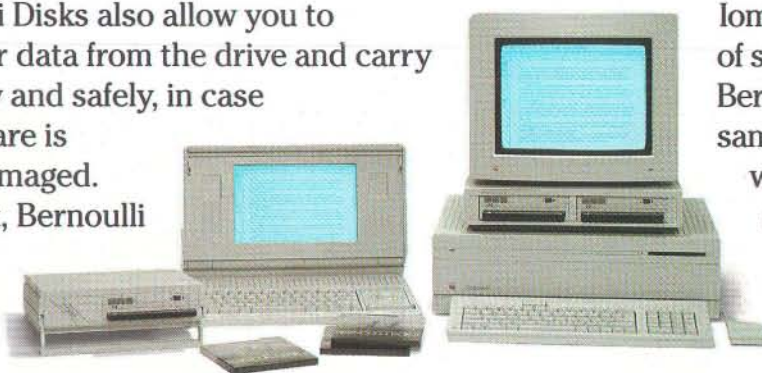


# PORTABLE 44 MEANS NO IFS, ANDS, OR PLUGS.



Bernoulli Disks also allow you to remove your data from the drive and carry it separately and safely, in case your hardware is stolen or damaged. Beyond that, Bernoulli provides unlimited storage and backup capacity, with 22msec effective access time, and Reed-Solomon data protection that's 15 times more effective than that used on a typical hard disk.

As the leader in removable mass storage,



Omega also has a complete line of single- and dual-drive 44MB Bernoulli products that offer the same benefits for Macintosh as well as IBM® users in desktop environments.\*

So make sure your data arrives with you. Contact an Omega representative or call 1-800-777-

6649 for complete specifications on the Bernoulli Portable 44 for Macintosh. And discover what it means to have secure data. No matter where you go.

**OMEGA**  
Never ending storage solutions.

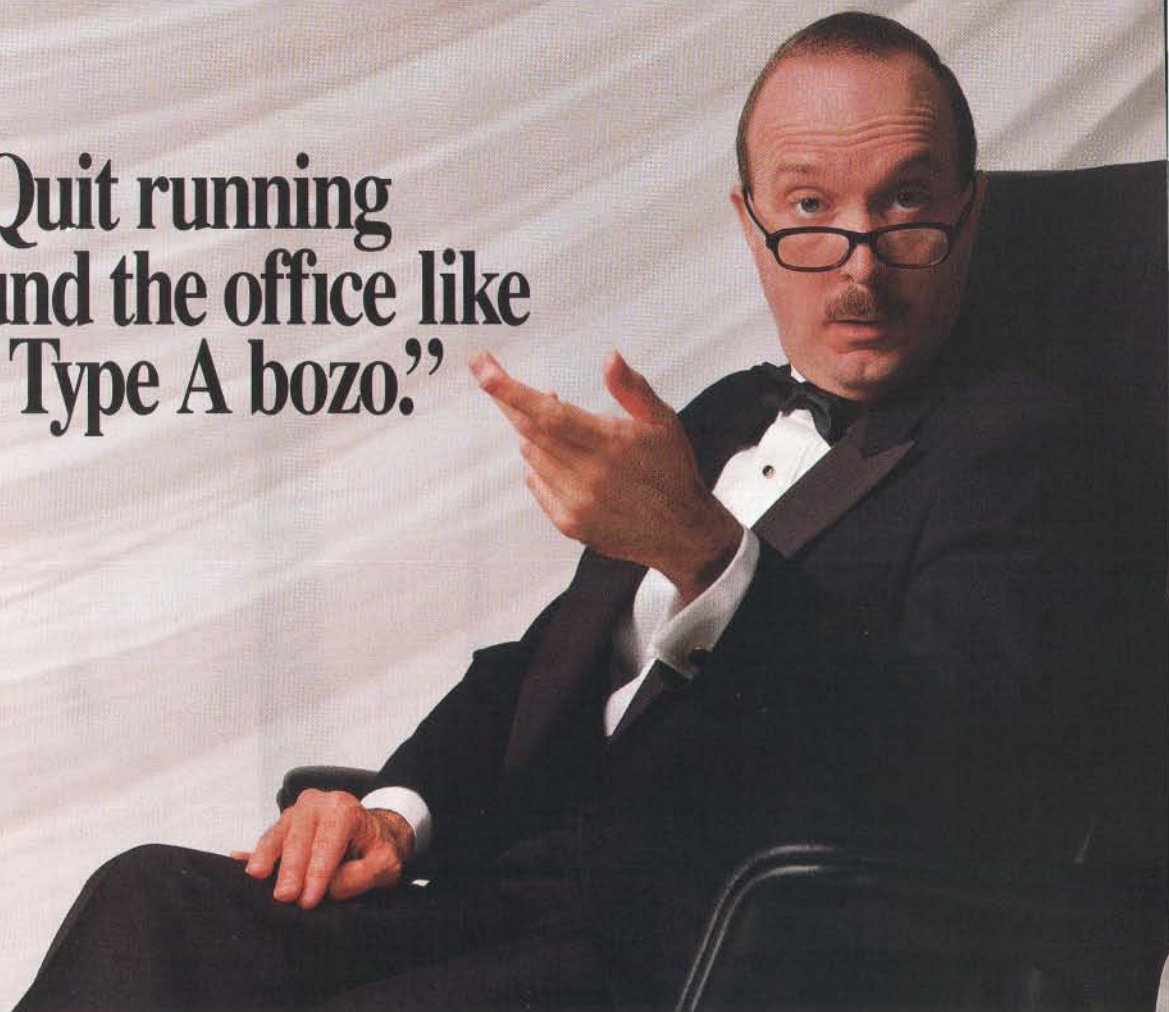
\*Bernoulli File Exchange software allows data migration between IBM and Macintosh. Bernoulli and Bernoulli Technology are registered trademarks and Bernoulli Means Security For Your Data is a trademark of Omega Corporation. Apple and Macintosh are registered trademarks of Apple Computer, Inc. IBM is a registered trademark of International Business Machines.

Circle 260 on reader service card



Dr. Productivity Says:

**“Quit running  
around the office like  
a Type A bozo.”**



**“Don’t confuse activity with  
productivity. Get QuickMail.”**

“In the time it takes to run across the office (to someone who’s not there anyway), you could have E-mailed your question, sent two more messages following up on different projects, answered several pressing questions that were E-mailed to you, then sent correspondence around the world. All without leaving your desk or your application. Ask anyone who’s used it: QuickMail is the biggest boost to productivity since fear.”

**“Don’t settle for hard-to-use  
mail. No one will use it.”**

“QuickMail is simple, yet rich. People enjoy using it, so they use it more. Good. Whether you’re sending mail around your LAN or around the world, QuickMail makes it so fun and easy, people will cut down on time spent playing games, and get some real work done.”

**“Don’t settle for feature-wimpy  
mail. You’ll outgrow it.”**

“QuickMail gives you true store-and-forward technology, real-time conferencing, custom forms, a mail log, wide area connectivity, access to mail from laptops or terminal packages, easy-to-use, automated gateways to the public networks like MCI Mail™, UNIX® mail, AppleLink® and more. Others talk about gateways. We’ve been delivering for months. (Beware of companies with Edsels in their ads.) You won’t outgrow QuickMail. Apple uses it. NASA uses it. Every major Macintosh® publication uses it. You can’t go wrong.”

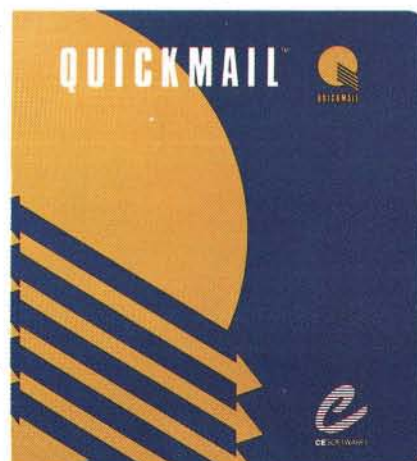
**“Want a second opinion?  
Ask the critics.”**

*“As we said before, CE Software’s QuickMail is the best electronic mail package on the Mac, and the latest updates have only increased its lead over Microsoft Mail and InBox.”* MacWeek, 8/8/89

*“Rather than exercising 20-20 hindsight, start out with QuickMail.”* Dave Kosiur, Connections, July-August/89

**“Go to a dealer  
and try it.”**

Versions for the Macintosh and PC. Suggested retail price: Version 2.2, 10 user pak: \$499.95  
Free literature and Where To Buy: 1-800-523-7638 Dept. CE32.







# Macworld Goes Global

## HOW WE MADE MACNOST IN THE USSR

S

BY JERRY BORRELL

omewhere on a side street of Moscow is an office where several people sit stooped over a couple of dim computer screens. The gray Russian winter still beats on the windows outside with a ferocity announcing its arctic origin. In the crowded

room, thick with cigarette smoke, you can hear the clicking of a computer keyboard. And then, from the far side of the room, comes a little ding that proclaims a Macintosh has been turned on.

Yes, Macs in Moscow. The irony of it all. The computer for the rest of us is becoming the people's computer, although that expression is certainly passé in the Soviet Union of today. Now the Macintosh will be used to help produce *PC Mir* (*PC World*) in the Soviet Union.

Fifteen years ago I wandered Moscow's streets as a student, my footsteps dogged by a host of less-than-subtle observers. At times an older person would pull me aside and whisper that as long as the Soviet people had bread, shelter, and peace, things were all right. Twenty million countrymen had died in the Second World War and could I please tell everybody in America that what people in the Soviet Union wanted most was peace.

Argue what you will about the role the USSR has played—Evil Empire or tormented giant of Asia—the Mac can certainly help bring about change and



James L. Forquer, managing director of Apple Computer Singapore, shows associate features editor Cheryl England Spencer the monitor-testing site at Apple's factory (top). Macworld UK editor Peter Worlock and senior associate reviews editor Carol Person savor London's famous weather.



the greater possibility of peace to the Soviet Union. Last fall the State Department approved the export of Motorola 68000 processors to the Eastern Bloc. So with the help of Apple Computer's Michael Spindler, Kent Edquist, and others, I have contrived to deliver the editors at *PC Mir* from PC tyranny through the use of Macintoshes to produce their bimonthly publication. Moreover, I've instigated an upcoming article in *PC Mir* that tells readers how to get started with desktop publishing in Cyrillic. Last winter I discussed desktop publication of *PC Mir* with my Soviet colleague Michael Volodarsky, director of Information Computer Enterprises [ICE] of the USSR subsidiary of IDG, our parent company. I was concerned—torn by my old experiences with the deadening Soviet system and by heartrending television pictures of thousands of people standing at the Brandenburg Gate of Berlin, singing, dancing. Celebrating the finish of four decades of totalitarian society. In the end, it was no contest and I plunged headlong into helping acquire Macs for the USSR.

PageMaker is being localized for Cyrillic, and Apple is expected to deliver a Cyrillic Mac for the USSR as early as May. A Macworld-sponsored seminar scheduled for April will help U.S. developers enter the Soviet market. The first major exposition of U.S. computers in Moscow is scheduled for (continues)



## Why Sensible Grammar™ is first in its class.

Now anything you write, from a business letter to an annual report, can be stronger and clearer. With Sensible Grammar.™ A professional proof-reading program that uses artificial intelligence to check your punctuation, usage, phraseology and more.

Sensible Grammar scans your work for potential errors and automatically displays the sentences in which they appear. It explains what's wrong and even suggests corrections. Making changes is easy—a simple click of the mouse, and you can do anything from inserting proper punctuation to rewriting entire sentences using the built-in sentence editor. And your formatting information remains unaffected.

Sensible Grammar compares your text against a library of over 4500 phrases to identify informal, vague, racist, sexist and other faulty language. It catches embarrassing typographical errors like misused capitalization and repeated words, and alerts you to mismatched verbs and pronouns, needlessly long sentences and more. It even provides a readability analysis.

Sensible Grammar works with WordPerfect, Microsoft Word, Works, and Write, Apple/Claris MacWrite and MacWrite II, T/Maker WriteNow and text files. And it costs just \$99.95.

So get Sensible Grammar. And be the most effective communicator you can be.

Also available: Bookends,™ the reference management database and bibliography preparation system (\$99.95).



**Sensible Software,® Inc.**

335 East Big Beaver, Suite 207  
Troy, MI 48063  
(313) 528-1950



Shigechika Takeuchi, president of Apple Computer Japan (right), and executive editor David Ushijima met in Tokyo.

July by cosponsors IDG and ICE.

There in the shadow of the Exposition of Achievements of the Soviet Economy will be Macintosh hardware and software as well as other personal computers. You could say that we are delivering technology to the Soviets that will help them repair their ravaged economy, and you may wonder whether that is something we should do. But as an observer with more than an academic knowledge of the Soviet people, I would argue that putting Macs into the hands of Soviet technocrats will accomplish what samizdat (publishing by hand—usually clandestine copies of banned books or political tracts) has only aspired to.

### Growing Global Influence

It may be hard to believe that in the greater scheme of things, in matters of the world, the Mac and *Macworld* have some role to play. But over the last year we have both grown incredibly. The Macintosh, with its ease of localization and expanding success abroad, has become much more an international computer. As for *Macworld*, sister publications are springing up around the world. Foreign *Macworlds* have been created by our parent company in Sweden, Australia, the United Kingdom, Denmark, Taiwan, and Germany. And versions are planned for Norway, Finland, Japan, France, and other countries. They do not merely license our name, but actually involve sharing editorial and staff between publications.

Three years ago I began to envision an international sharing of editorial staff, building bridges between our offices in San Francisco and the 35 countries where IDG has subsidiaries.

Most magazines offer travel perks to journalists (one of the small benefits they're given to make up for the relatively little money they derive from their profession) but I hope to offer the *Macworld* staff something more—actual working knowledge of what is happening with the Mac in foreign countries, knowledge of publishing abroad, exposure to different cultures. In turn we're welcoming the editors of foreign *Macworlds* into our offices, and initiating them into the ways of Silicon Valley.

This is not merely an attempt to win the loyalty (and longevity) of young editors, for the Macintosh has expanded greatly worldwide. In 1989 nearly 35 percent of Apple's revenues were derived outside of the United States. Strong markets and communities of product developers are appearing in other countries. People abroad are doing things with the Mac that are of interest to our readers, and we have a long tradition of writing about them.

### An Editorial Exchange Program

Senior editor Adrian Mello was chosen for the first exchange. Adrian traveled to Australia for three weeks in 1988 and went there again last fall. At that time, Adrian and I initiated remote network access to our AppleShare network server via Farallon's Timbuktu Remote, a setup that worked only sporadically in the first year. It was my goal to allow foreign editors to log on to our in-house network and access our stories, staff-created graphics, and E-mail.

The network capacity has grown—and *Macworld* UK was the first to log (continues)



Australian *Macworld* editor Osmund Lind Iversen (right) shows the sights of Sydney to senior features editor Adrian Mello.

Circle 396 on reader service card.

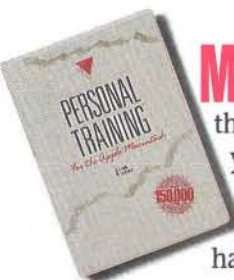




## Power Defined.



## Power Realized.



**M**aster the power of your software quickly as your own private tutor talks you through the software, step by step. With your hands on the keyboard, trying each new skill as it's explained, you'll learn quickly and thoroughly. Our interactive, hands-on tutorials are available for:

- Macintosh Basics
- Excel 1.5 or 2.2
- FileMaker II
- FreeHand 2.0
- HyperCard
- Illustrator 88
- PageMaker 3.0
- Persuasion 1.0 or 2.0
- Word 3.0 or 4.0
- Works 1.1 or 2.0

We offer beginning, intermediate and advanced tutorials for each of these software programs, so there's sure to be one that meets your needs.

Use the training that Apple uses for its own employees, and sells under its own name in Australia, Canada, New Zealand, and the United Kingdom.

If you're looking for a fast, convenient, affordable way to unleash the power of your software, call us at 1-800-TEACH-99 or 408-559-8635 and we'll send you a complete catalog — at no charge.

*The old way to learn your favorite Macintosh software took days. The Personal Training way takes just a few hours.*



**PERSONAL  
TRAINING  
SYSTEMS**

**Just like having a private tutor!**

**CALL 1-800-TEACH-99**

Circle 42 on reader service card

To receive a free color catalog, mail to: Personal Training Systems,  
828 S. Bascom Ave., Suite 100, San Jose, CA 95128 U.S.A.

NAME

COMPANY

ADDRESS

PHONE

# OF MACS

MW490



# "Cream of

## Do you compromise when you buy Apples?

To be chosen the best from a large crop of drives requires more than good looks. We've worked hard to make our drives the best, inside and out, because we know that your reasons for choosing a drive run more than skin deep.

You should know that many other drive manufacturers' concern with quality stops with the case. At La Cie we don't think that's what value is all about. That's why we only use the best drive mechanisms and components — and we can prove it. We offer the fastest, quietest and smallest drives with the only five year manufacturer's warranty in the industry backed for five years by Quantum and Hewlett Packard.

Our attention to details makes us better. Silverlining™ is one more example of that. We wrote it and MacWorld highly recommends it: "La Cie drives include the best software we tested." What does it do? Silverlining performs formatting, interleave setting, programmable SCSI addressing, true partitioning, resizing of partitions without initializing, diagnostics, password protection, defragmentation and much much more. We're proud to point out that Silverlining was the first partitioning software available for the Macintosh.

Next time you purchase a drive be sure you experience the difference... experience the cream of the crop — La Cie. That's your right.



Cirrus Drives



## Cirrus Drives

CAPACITY	CONNER ZERO FOOTPRINT	QUANTUM CIRRUS CASE
20 mb	\$399	
40 mb	\$479	\$579
50 mb		
80 mb	\$659	\$859
100 mb	\$759	\$959
120 mb		
170 mb		
200 mb	\$1159	
210 mb		
650 mb	Hewlett-Packard \$3099	

Includes Silverlining™, WingZ Test Flight, 5mb of public domain software. 30 day money back guarantee and a 5 year warranty for Quantum and Hewlett-Packard drives only.

FCC I.D. #GZJ-Cirrus

	<u>Cirrus by LaCie</u>	<u>Apple</u>	<u>Jasmine Eh</u>
<b>Primary drive</b>	Quantum	Quantum and Sony	Varies Seaga
<b>Speed</b>	Fastest	Fastest	
<b>Noise</b>	Quietest	5DB louder	32% slower 32% slower
<b>Size</b>	2 3/4 x 6 x 9" 4.2 lbs	2 times larger 90 days \$1250/5yr.	5DB louder 1.6 times larger 2 years
<b>Warranty</b>	5 years		1.4 times larger 2 years

MacWorld Says "Cirrus drives include an outstanding set of utilities"



# the Crop"

MacWorld, May 1989.

See You At  
MacWorld Expo  
Moscone Center  
Booth #625



Modem for Portable Mac \$249.95



Magneto-Optical Drive \$3999.95



Phone Line Manager \$199.95



Cartridge Drive \$799.95



Color Scanner \$1799.95

## Mass storage and productivity solutions for the Mac office.

### La Cie Modems:

- 2400 baud Internal data and fax modem for the portable Mac — **\$249.95.**
- 2400 baud Internal modem for Mac II — **\$299.95**
- 2400 baud External modem — **\$169.95**
- 9600 baud External modem — **\$819.95**

Introductory offer! All modems include MacKnowledge™. La Cie's Silverplatter™ software and cables.

**Cirrus 600MO Magneto-Optical Drive:** 600 megabytes of erasable, removable data storage. Includes superior Sony drive mechanism, plus our own Silverlining and Silverserver software.

**Phone Line Manager:** Automatically routes and sends voice, FAX and modem calls over a single line. Answers incoming calls and connects to the correct device automatically or by caller-entered access codes.

**Cirrus Removable Cartridge Drive:** 45mb cartridges offer limitless storage with floppy convenience and hard disk speed. Includes La Cie's Silverlining and Silverserver software.

**La Cie 911S Color Scanner:** La Cie presents affordable true color scanning for the desktop. The high-powered 911S scans vivid color images at 300 DPI, 24 bits-per-pixel in 16.8 million eye-catching colors. The 911S also scans in precise 256 gray-scale mode as well as single-bit black and white. Versatility and performance make the 911S the affordable scanner you won't outgrow.

**LaCie** LTD.

**Call Us Now! 1-800-999-0143**

16285 SW 85th, Bldg. 306  
Tigard, OR 97224, (503) 684-0143

Prices shown are cash prices and do not include shipping. Add 3% for VISA, Mastercard, 5% for American Express. Add 10% for rush handling. Cirrus, La Cie, Silverlining, Silverserver and Silverplatter are trademarks of La Cie, Ltd. Macintosh is a trademark of Apple Computer. Prices and specifications shown are subject to change without notice. Comparisons drawn from MacWorld reviews and company and manufacturers' specifications for 80 mb and/or 100 mb drives; call for further details. Product and company names are trademarks of their respective companies.

Circle 145 on reader service card



**You'll Save a Mac BUNDLE!**

...WITH \$ STRETCHING PACKAGES FROM AMERICA'S MAC SOURCE!

**Mac Plus**  
**\$1188.**  
 CPU price with package

**OUR POPULAR START-UP PKG.**  
 • Mac Plus CPU  
 • 20 mb. Hard Drive  
 • 2.5 RAM  
 • Printer included!  
 Regular retail price \$3300  
 MacFriends discount price **\$1998**  
 Save over \$1300!

**NEW! Includes 13" COLOR monitor!**

**SE/30 COLOR PKG.**  
 • Mac SE 30 CPU  
 • 5mb. RAM fast 80ns.  
 • 100mb. fast 19ms. H.D.  
 • 13" color monitor / 8 bit card  
 • 105 keybd w/Tempo II  
 Regular retail price \$8400  
 Our price **\$5388**  
 Save \$3000!

**SE/30**  
**\$2988.**  
 CPU price with package

**Mac IIcx**  
**\$3288.**  
 CPU price with package

**PRO-COLOR BUSINESS PKG.**  
 • Mac II cx CPU  
 • 100mb. fast 19ms. H.D.  
 • 5mb RAM fast 80ns.  
 • 13" color monitor  
 • 24 bit color card  
 • 105 keybd w/Tempo II  
 Regular retail price \$8400  
 MacFriends discount price **\$5988**  
 Save over \$2400!

**ASK ABOUT OUR BUSINESS LEASES ... AT AMERICA'S BEST RATES!**

**POWER USER'S COLOR PKG.**  
 • Mac II ci CPU  
 • 100mb. fast 19ms. H.D.  
 • 8mb RAM fast 80ns.  
 • 13" Sony hi-rez color monitor with 24 bit card  
 • 105 keybd w/Tempo II  
 Regular retail price \$9400  
 MacFriends discount price **\$7188**  
 Save over \$2200!

**Mac IIci**  
**\$4488.**  
 CPU price with package

**800-331-1322**  
**Compare...Then Call Us Last!**

**Mac Friends**  
 WE SPECIALIZE IN MAC ONLY!  
 SEE OUR ADS ON PAGES: 52, 250, 193

**Leases, COD's Credit Cards OK!**  
 All brand names shown are trademarks of their respective owners

Circle 58 on reader service card.



Editor-in-chief Jerry Borrell meets with Claris president Bill Campbell at the company's Sunnyvale, California, headquarters.

on with 9600-baud links and retrieve compressed graphics and text files. *Macworld* UK is actually a latecomer, the fifth Mac magazine to be launched in Great Britain and the largest Mac publication in that country, with over 33,000 readers. Our British sister publication is also the most active user of our network. Reviews editor Carol Person, assigned to work with British editor Peter Worlock, spent two weeks in January in the London offices. In April we will host a meeting of *Macworld* editors from around the world with the goal of sharing our electronic publishing technology on a wider basis. We await the time when the technology of image compression from companies such as Creative Circuits Corporation will allow us to send full-color images across the world just as we send half-megabyte graphics files at present.

Beyond the practical issues of communicating with international *Macworld*s, covering Apple Computer as it grows beyond \$5 billion in annual revenues has become a global task. Features editor Cheryl England Spencer's upcoming story on Apple's manufacturing required her to travel to Singapore to see one of the most automated plants in the world. Executive editor David Ushijima has been in Japan three times during the past year to follow the progress of Apple Computer in the Japanese market. Departments editor Deborah Branscum—fluent in Swedish—traveled to Sweden in March for an extended period of work with *Macworld* Sweden. After France, Sweden represents the largest market for Macs in Europe.

The editors of our sister publications in foreign countries give us eyes

and ears in Mac communities far beyond the reach of what we might be expected to know. The result? An extraordinary insight into uses of the Macintosh and how it will fare in international competition. And we've kept pace in the United States. We still maintain the largest editorial and design staff dedicated to covering the Mac. With over 375,000 subscribers, *Macworld* has grown to more than the circulation of the next two largest dedicated Mac publications combined. By the end of the year some issues will have more than 400,000 subscribers, making *Macworld* the fifth-largest computer magazine in the world. And as many as an additional 100,000 Mac users read our editorial material in foreign *Macworld*s. That's more people than read magazines such as *Science*, *Connoisseur*, and *Premiere*.

#### Back in the USSR

All of this makes me wonder what we might be able to accomplish in a nation like the USSR with 270 million people. At the time of Leonid Brezhnev's tenure there was a joke in Moscow that went like this: "Is it possible to wrap an elephant in a newspaper?" "Yes, if Comrade Brezhnev appeared at the Presidium yesterday"—an allusion to the fact that newspapers were required to print the full text of the stifling bureaucratese that constituted political speeches in the USSR.

For centuries Russia shared a great literary tradition with European cultures: Tolstoy, Dostoyevski, Gogol, Turgenev, Chekhov, Goncharov, Sholokov, Blok, Mandelstam, Babel, Pasternak, Solzhenitsyn. Writers who have vanished from (or never appeared in) government-sanctioned bookstores. Entire bodies of literature disappeared with the Communist consolidation of power in the 1920s. (After that the press and publishing became the organ of official opinion.)

Today, in the quiet bustle of a small office in Moscow, one can imagine the whistle of a LaserWriter fan and a slight grinding sound as the rollers push another page out. In excitement, people cluster around the machine to look at the Cyrillic text. For them, and for this nation, the Macintosh is truly a revolution. ■





# JMP™ to All the Right Conclusions.

New JMP Statistical Visualization Software from SAS Institute Inc.

Make the quantum leap in data discovery with JMP... the easiest, fastest, most reliable way to visualize your data. Yours today on the Apple Macintosh®

JMP lets you combine powerful statistics and graphics in one highly interactive process. Just point and click. Tools for manipulating, analyzing, and storing data all fit together so that one simple command generates a whole series of results!

## Data Analysis with a Visible Difference

JMP organizes classical statistics in six logical areas: *Distribution of Y's*, *Fit Y by X*, *Fit Y by X's*, *Specify Model*, *Spin*, and *Y's by Y's*. Each area comes complete with appropriate graphics. There's always a picture available for visually exploring your data, so you can make discoveries that just aren't possible through numeric reports alone.

Generate *leverage plots* for a point-by-point view of hypothesis tests...*means comparison circles* for viewing differences among group means...and multi-dimensional data views such as *spinning plots*, *biplots*,

and *scatterplot matrices*. JMP handles all combinations of measurement levels—interval, ordinal, and nominal—with appropriate statistical methods.

## Call Today for a Free Technical Summary

JMP brings you superior statistics and graphics... backed by a full year of free technical support.

For more details about JMP, call our JMP Sales Department at (919) 677-8000. In Canada, call (416) 443-9811.



**From SAS Institute Inc.,  
the number one name in data analysis software.**

SAS Institute Inc. □ JMP Sales Dept.  
Box 8000 □ SAS Circle □ Cary, NC 27512-8000  
Phone (919) 677-8000 □ Fax (919) 677-8123

To use JMP, you need an Apple Macintosh with 1+ meg, 2 meg recommended.

JMP is a trademark of SAS Institute Inc., Cary, NC, USA. Apple and Macintosh are registered trademarks of Apple Computer, Inc.

Copyright © 1989 by SAS Institute Inc. Printed in the USA.

See us at the San Francisco Macworld Expo at Booth # 5814



# SOLUTIONS

**CMS Enhancements provides you with the solutions to your most challenging storage problems.**

You don't have to experiment with trial and error to solve your Apple® mass storage problems. That's because **CMS Enhancements** provides you with total solutions to meet today's storage needs.

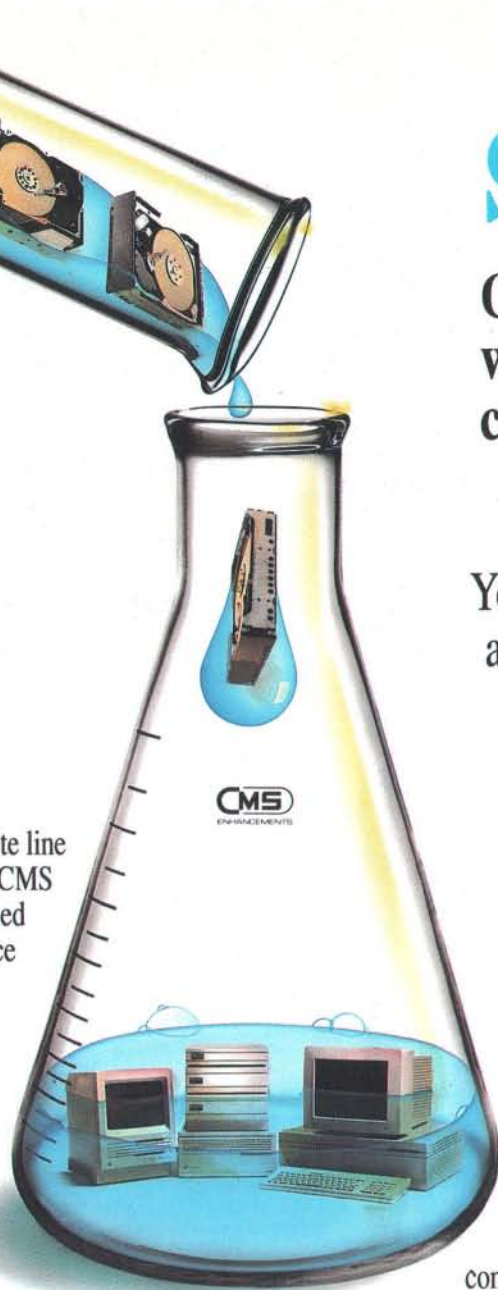
**F**eaturing a complete line of mass storage solutions, CMS hard disk drives are designed to optimize the performance of today's wide variety of Apple systems.

Whatever your capacity or performance needs, CMS has the disk drive that's right for you. And all of our models are engineered and manufactured to the highest standards of quality and reliability.



*Macintosh II Solution: Internal Hard Drives; 90, 170, 300 and 600 MB. 16.5 - 18 ms.*

\*Disclaimer: The CMS logo is a registered trademark of CMS Enhancements, Inc. All other products and brandnames are registered trademarks of their respective companies.  
Copyright CMS Enhancements, Inc. 1989



At CMS, we complement our state-of-the-art products with instant availability, competitive

pricing, and the finest in service and support. No wonder we're the industry's leading supplier of complete storage solutions— with over one million hard disk drives sold, worldwide.

*Macintosh SE Solution: Platinum Series External Hard Drives; 90, 170, 300 and 600 MB. 16.5 - 18 ms.*



*Macintosh IIfx Solution: Platinum Series External Hard Drives; 90, 170, 300 and 600 MB. 16.5-18ms.*



So contact your nearest CMS Enhancements dealer, today. And let CMS provide the perfect formula to solve your storage problems.

**For the name and telephone number of your local CMS Enhancements dealer, call us at 714-259-9555.**

**CMS**  
ENHANCEMENTS

Circle 85 on reader service card





# LETTERS

A forum for Macworld readers

## Can You Spare a Couple of Megs?

**W**hat a bunch of whiners! You will always need to upgrade computer hardware to take advantage of new and exciting technology [Letters, December 1989]. I'm surprised that these guys bought a Mac to begin with, when they were probably happy with their Speak & Spell (which, by the way, never needed an upgrade).

Hey, guys, wake up and smell the coffee. System 7 will run on everything from a Plus on up—as long as you have 2 megabytes (are you listening? 2MB) of RAM. With the cost of RAM steadily declining, what's the big deal? Is this too much to spend for IAC, outline fonts, new print architecture, database access, and so on? Five bucks says some of you are still watching black-and-white TVs and bitching about the C-note you dropped ten years ago for that HP calculator.

G. Overton  
Des Moines, Iowa

## Upgrade Optional, Not Required

**F**rom all the griping about System 7 in the December Letters column, I'd swear that RAM upgrades cost thousands of dollars and that Apple is going to recall all copies of System 6 as soon as System 7 ships.

System 7 is not going

to make your SE obsolete. Turn to page 96 of the December issue and you'll see an ad for RAM at \$119 a megabyte. My Calculator DA tells me that comes to \$238 plus shipping to make your Mac ready for System 7. No, you won't get virtual memory, but you don't have it now, either, so you won't be any worse off than you were before.

I find it hard to understand why users who won't balk at spending hundreds of dollars on the latest word processor, page-layout, or illustration program suddenly march themselves off to the poorhouse when confronted with the purchase of RAM.

Take heart, genuinely penniless Mac users who can't budget a RAM upgrade. Jean-Louis Gassée is not going to slide down your chimney one night and smilingly make off with your System Folder. You can keep running System 6 and your current ap-

plications till the cows come home—or till you win the lottery.

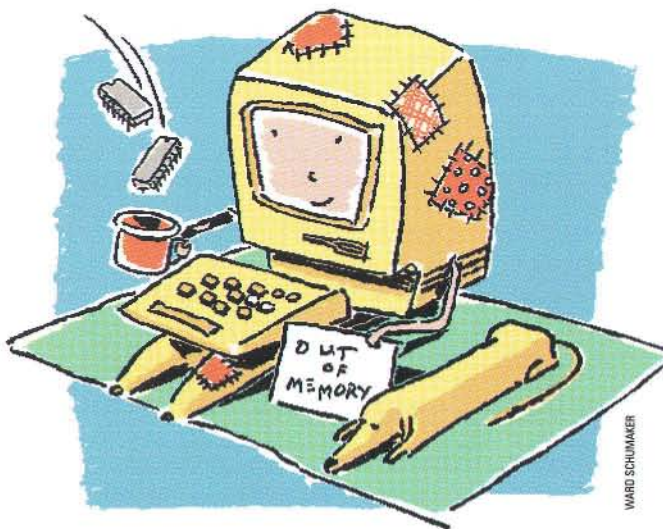
J. Peter Alfke  
Tucson, Arizona

## Package Pollution

**Y**ou should add one more parameter to your evaluation of software, namely, the level of excessive hard-plastic (not shrink-wrap) packaging. Maybe you could even use a trash can symbol for amount of waste (for example, a one-can versus a four-can product).

I have come to be appalled by the number of hard-plastic presentation shells I toss when I get a new piece of software.

This stuff is very difficult to dispose of in the environment; it can actually trap and kill many forms of wildlife, especially in marine ecosystems. Coastal birds and some mammals ingest this stuff and either have their throats cut by it or starve to death. Cardboard (continues)



WARD SCHUMAKER

## Corrections

RGB Technology charges \$720 per year for on-site service of its printers in the continental United States ("Hot Wax & Cold Ink," February 1990) and \$2000 for customers in Alaska and Hawaii.

Hey I Can Print, by R&B Software, 800/627-9778 (New Products, January 1990), is a series of printing tools for HyperCard and SuperCard.

The table "Number Processors" ("Math without Tears," January 1990) should have noted that MatLab 1.1 runs on the Mac, PC, VMS, and UNIX.

The following information should have appeared in the table "Forms Features" ("Forming Opinions," February 1990): Panorama 1.5 has been released; it can generate forms of up to 9 pages; it imports PICT and EPS graphics; and it offers data-entry constraint options.

Quality Discount Computers offers a 90-day (not a 30-day) warranty on its Mac/Apple II daisy-wheel printer (Conspicuous Consumer, February 1990).

The phone number for Mac Doctor Electronics, maker of Brainstorm memory expansion and SCSI interfaces and system upgrades ("Is Your Mac Obsolete?" February 1990), is 415/964-2131.





and paper can serve the same structural function for packaging; for example, HyperGlot uses cardboard and paper packaging for its language HyperCard stacks.

This is one industry that should be sensitive to that kind of thing.

*Elliot Einzig Porter  
Berkeley, California*

### Harmful Emissions

**A**s an owner of a Mac SE, I have long wondered about the existence of harmful emissions beamed at me as I work. How bad are these thought to be by the medical community? And are there any reasonably priced products that effectively deal with these emissions?

Thus far, the seemingly most effective shield that I know about is the rather

expensive (\$179) Eyeguard-XP (Natural Energy Works, P.O. Box 1395-C, El Cerrito, CA 94530, 415/527-6267). It's a thick leaded shield that the company claims will filter out emissions from X rays, microwaves, ultraviolet rays, positive ions, VLF, and ELF. Is this my only effective recourse?

*Raymond H. Rosenstock  
Keene, New Hampshire*

While there is proof that VDTs produce emissions that are harmful, space prohibits us from going into detail here. (Please read our upcoming June issue, which will focus on this topic.) Although monitor screens and shields can cut down on emissions and glare, we know of none that can block *all* electric and magnetic fields. Ergonomic Computer Products (415/673-5757) has information on many

of them. Safe Computing Company (617/444-7778, 800/222-3003) makes a shielded liquid crystal display monitor that it claims emits no electric or magnetic fields. The company also makes a hand-held meter to measure magnetic radiation from computers. Other resources for information on VDT-related radiation studies include the bi-monthly newsletter *VDT News* (212/517-2802) and the Center for Office Technology (212/560-1298), an association of industry trade groups and computer manufacturers.—Ed.

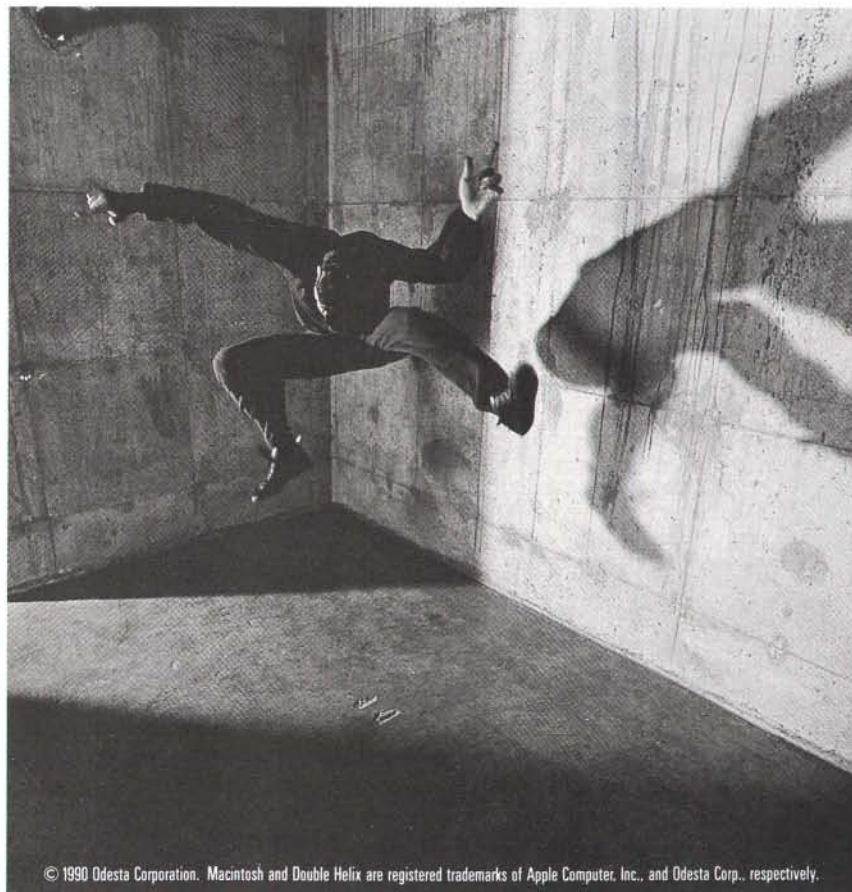
### Mac Font Formats

**I** want to clarify two items mentioned in your editorial [*Commentary*, December 1989] that could be subject to misinterpretation.

Regarding Agfa CompuGraphic's position concerning font formats, we

intend to support the major font formats in the marketplace: Hewlett-Packard's PCL, Adobe's PostScript, and Apple's Royal. However, we have made no such commitment to manufacture a QuickDraw image-setter. This can be a confusing issue as it relates to the difference between font formats and page-description languages.

I also want to clarify my comments regarding HP and IBM. We are working with HP to address the significant office-publishing market with our Intellifont font-scaling technology and HP's PCL printer line. We have also worked closely with HP to bring to market a PCL-based imagesetter and font utility, Type Director. The point is, IBM—not (continues)



"Double Helix...is for Macintosh® users who want to solve their information management problems quickly, easily, and without going mad in the process."

*Apple Business, November 1989*

Lift yourself to new heights with the code-free environment of Double Helix. For more facts or a Test Flight, call: 1-800-323-5423.

## Double Helix®

The database that makes a picture worth a thousand words.

© 1990 Odesta Corporation. Macintosh and Double Helix are registered trademarks of Apple Computer, Inc., and Odesta Corp., respectively.

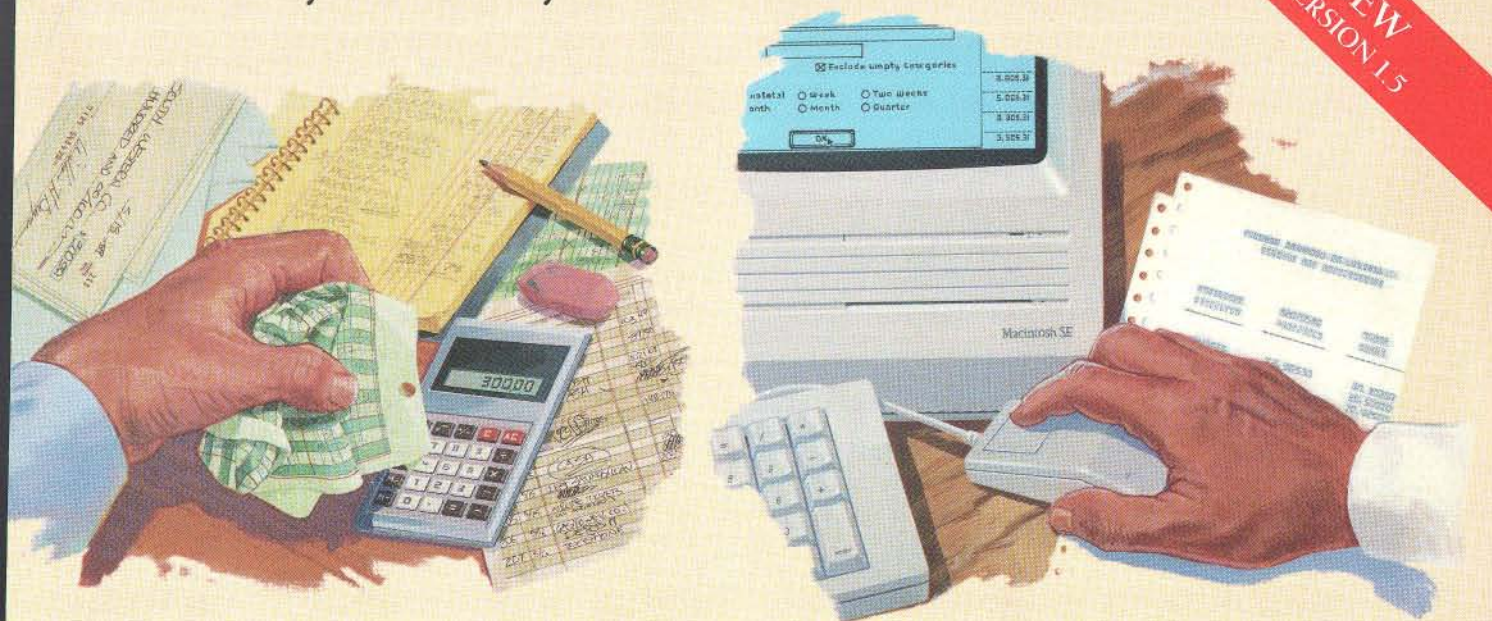
Circle 352 on reader service card.

AD11DH/040190



# Say Goodbye to Financial Hassle

NEW  
VERSION 1.5



## So Long, Tedium ... Hello, Quicken

Why waste time doing your finances? Quicken slashes time and effort every month...perfectly organizes your finances...and provides instant insight into your money matters.

## Breeze Through Financial Chores

Quicken takes the drudgery out of routine finances. It automates everything from bill paying to bookkeeping...reconciling to reporting. Quicken does in minutes what used to take hours.

Quicken actually learns your regular bills. In seconds, it hands you printed checks already addressed for mailing.

Quicken even saves you time with handwritten checks. With a few key-strokes, just enter the transactions, and Quicken eliminates the math and the mistakes.

## A Bigger Picture with Smaller Effort

Quicken automatically organizes your finances. Imagine always knowing how much money you have...and exactly where it's going. At the click of a button, Quicken generates insightful reports such as Income and Expense, Cash Flow, Budget vs. Actual, Job Costing, and more.

## Relax at Tax Time

Stop dreading April 15. With Quicken's Tax Summary reports, you'll instantly have itemized lists supporting each tax deduction. Plus, Quicken links directly to top selling tax software such as MacInTax®.

## NEW VERSION 1.5

- More flexible reporting:
  - New multi-column reports for trend tracking
  - A/R aging and customer history reports
  - A/P reports by supplier
- "Modeless" reports recalculate automatically on screen
- Improved payroll handling
- More ways to split transactions
- New wallet-size and laser voucher checks
- New Canadian dates and tax categories

## No Wonder It's #1 in the World

Quicken is the best selling finance software in the world. Ken Landis of



MacUser gives Quicken the highest rating of five mice and says, "Quicken is a great program...the industry standard."



## No Accounting Mumbo Jumbo

If you don't know a "debit" from a "credit" and don't want to learn, Quicken is for you. It's so easy, you're up and running in minutes. Because the whole program looks and works just like the paper checkbook and register you've always used.

## Powerful Business Features

Over half of Quicken's customers use it for small business bookkeeping. Quicken produces financial statements such as P&Ls, Tax Summary, and other useful reports. It forecasts cash flow, tracks A/R, A/P, payroll, jobs, and more.

## Try Quicken FREE for 30 Days!

Order from the coupon below, and if you're not completely satisfied for any reason, simply return it for a full, no-questions-asked refund. So, why wait? Say good riddance to financial hassle, and order Quicken today.

\$59<sup>95</sup>



**Yes,** I want to say goodbye to financial hassle and try Quicken. If I'm not completely satisfied, I may return it within 30 days for a full refund. Quicken Version 1.5 for Macintosh® at \$59.95, includes free shipping by air. CA residents, please add sales tax. For coupon orders, allow 10 days for delivery in U.S., and longer to Canada.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Daytime Phone (\_\_\_\_) \_\_\_\_\_

Preferred payment method (check one)

☐ Check enclosed (no purchase orders or COD, please)

☐ Visa ☐ MasterCard ☐ American Express

Card No. \_\_\_\_\_ Exp. Date \_\_\_\_\_

Signature \_\_\_\_\_

Mail to:  
**Intuit**  
P.O. Box 3014  
Menlo Park, CA 94026

Or, call:  
**1-800-624-8742**  
in U.S. and Canada.

G-MW04



Hewlett-Packard—could be the potential loser as a result of the Microsoft-Apple alliance, because Apple can now compete on a more equal footing with IBM PCs.

*Ken Draeger*

Agfa Compugraphic

Wilmington, Massachusetts

## 90 Days Is Enough

**R**egarding "Apple Plays Robber Baron" [*Conspicuous Consumer*, December 1989]: A 1-year warranty is something we Mac consumers don't need but are going to have to pay for. Lemon hardware will crap out within 3 months, and hardware that holds up for 3 months is going to last at least 9 more. I know there are exceptions. But thanks to all the uproar, Apple will have a legitimate excuse for charging a dollar for a dime's worth of addi-

tional service. I vote for Apple to continue good quality control, 90-day warranties, *and* the lower prices.

Your article says Apple can make money off defective merchandise by getting a 12-month warranty from another manufacturer, passing that manufacturer's merchandise on to the consumer with only a 3-month warranty. If Apple does indeed do this, consumers will eventually go directly to those manufacturers, cutting Apple out altogether. Apple, however, has not gotten where it has by adhering to short-sighted marketing practices. Right, Apple?

Joe A. Dale

Waco, Texas

## Quality, Not Quantity

Your December *Conspicuous Consumer* column

continues the recent trend of Apple bashing in your publication. From experience, I've learned that the length of a product's warranty has remarkably little correlation to the product's quality. Reliability is what I want and what I've gotten from Apple products and, with a few exceptions, what I've not gotten from third-party products.

Have there been problems? Certainly. As your column pointed out, the original Mac and Mac Plus power supplies had problems. Hard disks have been a more recent problem. A few weeks ago, I had an 80MB hard disk fail. The "inadequate" 90-day warranty on the Mac IIcx had expired, but of course I had to get the disk repaired. How much did the repair cost? Nothing. How long did it

take? Including "shipping" time, about 45 minutes. Not bad for off-warranty service.

Kenneth Good

*Ann Arbor, Michigan*

## 1 MB Is Not Enough

**H**aving recently upgraded from a Mac Plus to a IIci, I've encountered numerous conversion problems, including software incompatibility, problems with peripheral interfacing, unkept delivery commitments, and—most irritating—the discovery that the IIci requires 2MB of RAM to run color properly. My dealer had just returned from an Apple-sponsored seminar for educating dealers on the IIci, where the Apple representative assured everyone that the machine would work perfectly with 1MB. I called Apple to com-

*(continues)*

# ARTROOM

*New Art Room 4.0  
Now Shipping!*

**SPECIAL THIS MONTH ONLY**

<b>\$799</b>	<b>ARTROOM 4.0 DISC ONLY</b>	VERSION <b>4.0</b>
<b>\$1299</b>	<b>ARTROOM 4.0 &amp; CD DRIVE</b>	

ArtRoom 4.0 shipping March 1, 1990.

4.0

We've just released ArtRoom™ 4.0 – a substantial upgrade. ArtRoom 4.0 has been expanded to include five new volumes of Image Club's award winning DigitArt™ EPS clip art. Over 3000 images are at your fingertips on one CD ROM. Bundled with ArtRoom 4.0 you'll receive the image reference catalog and our new image retrieval system. Simply enter any search word and the ImageRetriever™ selects and displays all related images. From borders & symbols to outline letter sets & headlines, it's all on the ArtRoom 4.0 CD. This month only pick up the ArtRoom for \$799 (regular price \$999)\* or \$1299 for the disc and the new NEC CDR-35 CD ROM drive. Do it now! Phone our toll free order desk to purchase your ArtRoom 4.0 or to request a catalog. **This offer expires April 30, 1990.** DigitArt PostScript clip art is compatible with any Macintosh or MS DOS computer and any PostScript compatible printer. A TIFF version of the ArtRoom is available for non-PostScript laser printers. \*\$249 upgrade from ArtRoom 3.0. This ad was created with fonts from the Image Club Typeface Library. Images from DigitArt clip art library, laid out in PageMaker and output to a Linotronic 300 at 2400 dpi.

**SUMMER**

**LIFE STYLE**

**Image Club Graphics, Inc.**  
#5 1902 11th Street S.E.  
Calgary, Alberta T2G 3G2  
(403) 262-8008 Fax (403) 261-7013

VISA MasterCard & American Express  
Outside USA call (403) 262-8008  
**800-661-9410**



# All These Videos Were Created By A Mouse

## COLORSPACE IIIi

If you can point and click, you can produce professional quality color videos with ColorSpace IIIi. The video card that lets you overlay anything created on a Mac II onto live or recorded video.

ColorSpace IIIi's



advanced genlocking technology assures crisp, high-quality images by synchronizing Mac graphics, titles, and animations to any standard TV video signal. You can even digitize still images from a video camera.

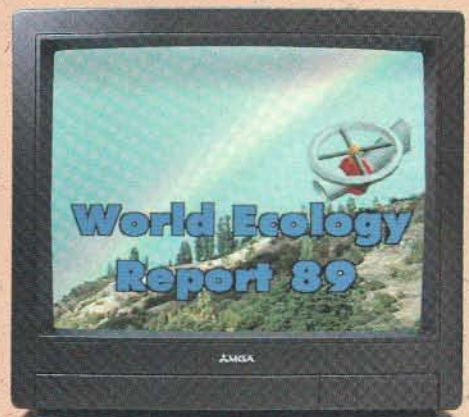
And while ColorSpace IIIi is easy to use, it lets you get as sophisticated as you want. Because it works with all the most powerful Mac software—HyperCard,<sup>™</sup> SuperCard,<sup>™</sup> and Director.<sup>™</sup>

All of which makes ColorSpace IIIi the technology of choice for today's desktop video applications: animations; film and commercial storyboards; sales/promotional/instructional videos.

For details, your nearest dealer, and to order our \$9.95 demo tape, call 800-522-7979. And let your mouse make you a star.



EDUCATION



PRESENTATIONS



PROMOTIONS



TRAINING

Award-winning ColorSpace IIIi turns your Mac into a professional desktop video production studio.



550 Del Rey Avenue, Sunnyvale, California 94086. In Canada call 604-276-2326. For international distribution call 408-522-1200. All trademarks are the property of their respective owners.



# CA-Cricket Appeals To Any

## MIND-BLOWING GRAPHICS FOR YOUR CREATIVE HALF.

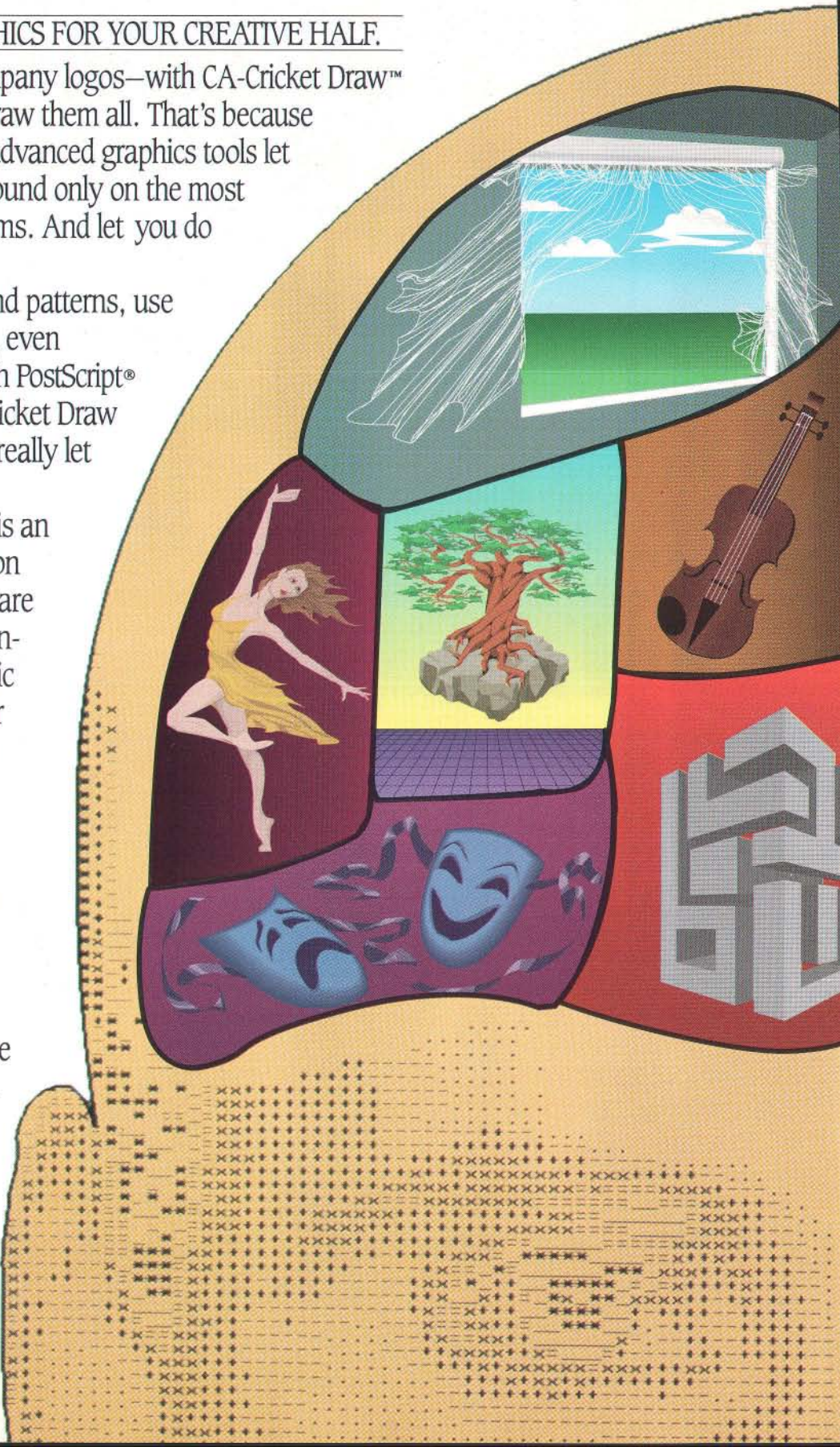
Realism, cubism, company logos—with CA-Cricket Draw™ you've got the power to draw them all. That's because CA-Cricket Draw's highly advanced graphics tools let you do things heretofore found only on the most expensive drawing programs. And let you do them with ease.

You can map colors and patterns, use bezier curves for precision, even enhance your drawings with PostScript® special effects. With CA-Cricket Draw you've got the freedom to really let your imagination roam.

CA-Cricket Presents™ is an all-star desktop presentation program that lets you prepare slides, overhead transparencies, handouts and electronic presentations right on your computer. It's even got an outliner to help you get it all together.

More than just a business graphics program, CA-Cricket Presents lets you plot graphs, draw logos, even generate your entire presentation from the outliner with a single click. All in bright, vivid color. With CA-Cricket Presents, you get the best of both worlds in one easy-to-use program.

PostScript is a registered trademark of Adobe Systems, Inc.





# One With Half A Brain.

## VIVID VISUALS FOR YOUR ANALYTIC HALF.

No need to let the other half have all the fun. With CA-Cricket Graph™, your analytic side can be every bit as creative. You'll find 12 different graphs to choose from—everything from log charts to polar graphs—with applications for both science and engineering. You can customize fonts, shades and color patterns

—even re-arrange and re-size your graphs on the page. With up to 2,700 rows and 40 columns in each data window, CA-Cricket Graph can make even the most complex information look intelligible.

In addition to being easy to use, you'll find that all three CA-Cricket programs can be rather sophisticated. So you won't outgrow them once you learn how to use them.

And all three share one very special feature—their innovative user interface.

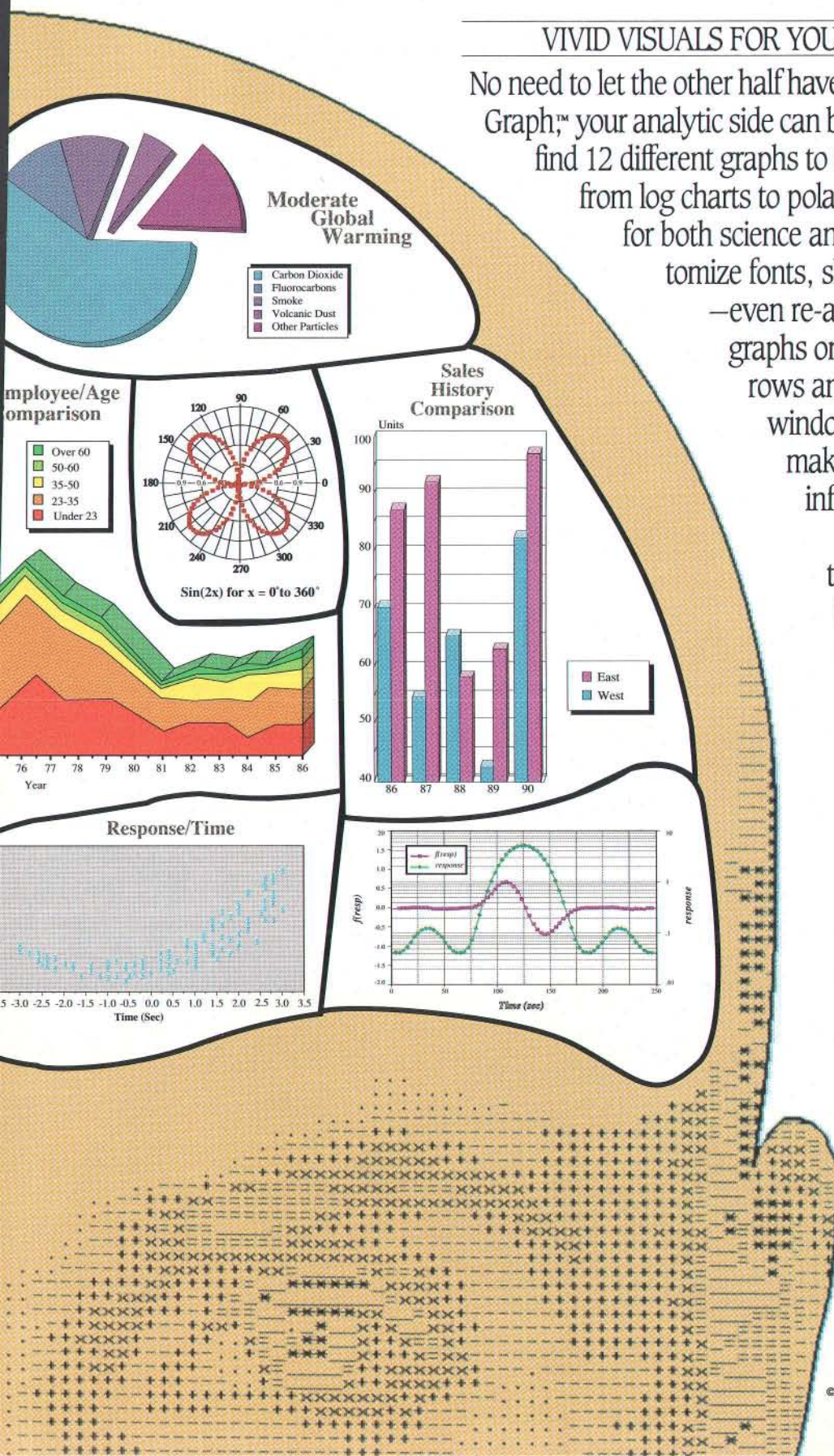
No other software gives you so much bang for your buck. Which is why CA-Cricket isn't just the emotional favorite. It's the logical one as well.

For the authorized CA-Cricket dealer nearest you, call **1-800-531-5236** (in Canada, 1-800-663-6904).

**COMPUTER ASSOCIATES**  
Software superior by design.

© 1990 Computer Associates International, Inc., 711 Stewart Avenue, Garden City, NY 11530-4787

Circle 510 on reader service card





plain, but received, predictably, little sympathy, no support, and no admission of guilt.

I asked my dealer to order me three additional 1MB SIMM chips from Apple. Of course, they're back-ordered. I've been waiting six weeks and the best delivery estimate Apple can give my dealer is "maybe this month."  
*Michael Darling*  
*Ossining, New York*

### Erasing Some Black Marks

After reading your December review of the Ricoh PC Laser 6000-PS printer (our best-selling laser), we were puzzled by your statement that replacing the toner can be a messy job. Not one customer has ever complained about having to clean up a mess. We've used several alongside our Apple Laser-

Writers on a network and found them no messier than the Apples.

You follow the same process to release the toner into the work tray as you do with the Apple and other Canon engine-based lasers. The only difference is that you have to hold the cartridge in place, and then discard it when finished, as opposed to leaving it in the machine.

He next complains that you have to get down on your knees to read the display panel. Why would you have to do this, when, if the printer is sitting on your desk, you're already at an acceptable eye level with the display? He also says that the legend for the control panel is located away from the panel itself, and you can't see one while looking at the

other. Not true. The control panel legend is visible right on the control panel as it should be.

We feel sorry for those readers who, based on perhaps well-meaning reviewer comments, spent hundreds more for less performance.  
*Steve Folkestad*  
*Mac Friends*  
*Portland, Oregon*

### In Sync with MultiFinder

In your December review of Synchronicity, our personal strategy tool, the reviewer claimed that you cannot use the MultiFinder icon while the program is running. This is not true—Synchronicity is (and always has been) fully compatible with MultiFinder. I think what the author was trying to point out was that, due to the full-bleed art on the screen, we

opted to keep the Multi-Finder icon invisible while the program is being used. But the button is still in position, and it can be clicked to switch between applications, including Synchronicity, at will.

*Paul O'Brien*  
*Visionary Software*  
*Portland, Oregon*

### Acius Online

The CompuServe Information Service (CIS) address listed in Tony Oppenheim's article "Insights on 4th Dimension 2.0" (January 1990) was recently changed. To access the Acius forum on CompuServe, just type Go Acius from the main menu.

The Acius forum now provides multiple sections dealing with various 4th Dimension topics—such as (continues)

# BOLDLY GO WHERE NO MAC HAS GONE BEFORE

Macintosh® users can finally choose from the thousands of software programs only available for the PC.

With SoftPC®.

The only software package that brings true MS-DOS® compatibility to a Mac II, IIX, or 68020-accelerated SE.

SoftPC enables you to run all the PC best-sellers—Lotus® 1-2-3®, WordPerfect®, etc.—on the Mac. And those PC programs developed in-house for special purposes.

You can even use PC and Mac programs at the same time, thanks to SoftPC and Apple's MultiFinder™. Copy and paste between PC to Macintosh applications.

And when you finish, all information can be stored on the same Macintosh hard disk.

### THERE'S NO REASON TO BE AFRAID

No boards... No hassles... SoftPC is easy to install and upgrade. Just like you'd expect from any Macintosh application. Double-click. That's it.

### SEEING IS BELIEVING

Don't take our word for it. Visit the nearest computer dealer and ask for a demonstration of SoftPC. SoftPC will open a whole new universe for you.

To find the dealer closest to you, call 800-848-7677.

### Insignia

Insignia Solutions Inc.,  
254 Gerontimo Way  
Sunnyvale, California 94086  
Tel: (408) 522-7600  
FAX: (408) 733-9541

™ trademarks and ® registered trademarks of their respective companies.



Circle 69 on reader service card.



# CheckFree: The Fastest Way To Pay Bills And Handle Finances.

## CheckFree®

**Electronically Pays All Your Bills  
And Automates Your Recordkeeping.  
No Checks, No Stamps, No Paperwork.**

## Specially Designed for The Macintosh.®

For the first time, Macintosh users can experience the speed, convenience, and simplicity of paying bills the CheckFree way. Now you'll discover that CheckFree is the superior bill-paying solution.

## It Couldn't Be Easier.

All you do is enter payment information, and CheckFree software automatically records, categorizes, and sends the information to the CheckFree Processing Center via modem. Payments are then processed through the Federal Reserve System—the same system that banks use to clear your checks today. Fixed, recurring payments (such as mortgages) can be made automatically; once they're set up, you never have to bother with them again.

## Pay Anyone Through Any Bank.

You can pay anyone with CheckFree because the CheckFree Processing Center utilizes electronic transfers as well as laser printed checks to make payments. If a company or individual you are paying is not set up for electronic payment, the CheckFree Processing Center will print and mail a laser printed check for you. Because of its universal payment processing technology, CheckFree can process payments to anyone in the U.S. through the checking account you already have at any bank, credit union, or savings and loan.

## No Loss Of Float.

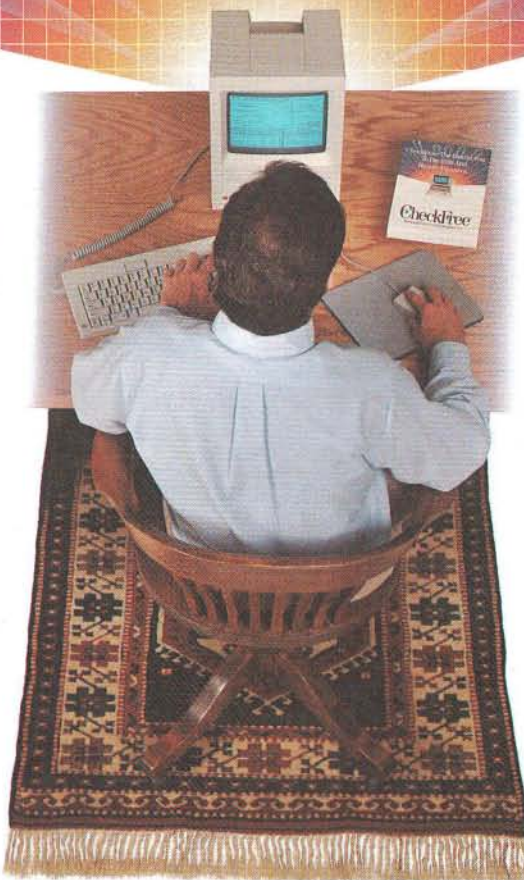
You tell the CheckFree software when you want your bills paid and the CheckFree system pays them on the dates you specify. All we need is a few days advance notice to make sure your payments get processed on time.

## Saves Time, Paperwork, And Money.

Your bill paying and other routine financial activities can be reduced to just a few minutes. Paperwork becomes virtually non-existent. Plus, the CheckFree service is only \$9.00\* per month—not much when you consider the savings in postage, bank charges, and late fees.

**Availability:** CheckFree is carried by leading retailers including Egghead Discount Software,® Electronics Boutique,® Babbages,® Walden Software and Bookstores,® and Software Etc.® Also available through the CompuServe Electronic Mall (Go CF). **Hardware Requirements:** Macintosh® 512KE or higher, 800K drive, and a Hayes® compatible modem. **Guarantee:** If you are not completely satisfied with CheckFree software, return with proof of purchase within 30 days for a full refund (phone or mail orders only). **\*Limitations:** Over 20 monthly transactions involve a nominal surcharge (\$3 per ten payments or portion thereof). CheckFree is a registered trademark of CheckFree Corporation. All other trademarks are the property of their respective corporations.

Reprinted from PC Magazine, November 14, 1989. Copyright © 1989, Ziff Communications Company.  
Copyright © 1989 by Scholastic Inc. All rights reserved. Reprinted from the May issue of Home Office Computing magazine.



## Organizes Your Finances.

CheckFree gives you a completely automated checking account register that's updated automatically with each transaction. You can also record deposits or other non-CheckFree transactions. Checkbook reconciliation is virtually automatic. There's even an easy-to-use package of income, expense, and budget reports that keeps you constantly aware of what's coming in and what's going out. Plus, you can export CheckFree data to Excel® and MacInTax®.

## Completely Secure.

CheckFree is more secure than conventional check writing. Payments are processed through the Federal Reserve System, so CheckFree never requires actual access to your account. Only you have access to your funds and only you authorize payments.

## Backed By The Nation's Leader In Electronic Payment Services.

CheckFree has been the leader in electronic payment processing since 1981, with current payment volume exceeding \$1,000,000,000 annually.

## Used By Thousands All Over The U.S.

See what experts have to say:

"The CheckFree electronic bill-paying service belongs to that rare class of product that is forward-looking, universally useful, and available today."



**PC Magazine, Best of 1989 Awards  
January 16, 1990 issue**

"CheckFree makes bill paying a quick, painless task rather than a monthly ritual to be dreaded...CheckFree Corporation has been handling commercial electronic payments for companies such as CompuServe® for years, and their experience and professionalism showed in all aspects of my dealings with them."

**PC Magazine**

"...CheckFree did not fail me. When my banking statement arrived the first thing to catch my eye was a CheckFree check...this was reassurance that someone else could be trusted to pay my bills..."

**Robert Cullen, Home Office Computing**

To get CheckFree working for you, call **1 800 882 5280** (Monday through Friday from 9AM to 7PM EST), send in the coupon below, or see your local dealer.

Yes, I want a fast, easy way to pay bills and handle my finances! Please send me:

**CheckFree®**

☐ CheckFree software for the Macintosh just \$29.95. (Money back guarantee; return within 30 days if not completely satisfied for full refund.)

☐ Also, please send me a Hayes Personal Modem 1200® for an additional \$99.00.

(Ohio residents add 5½% sales tax.)

A \$4.00 shipping charge will be added to all orders.

Name

Address

City, State, Zip  (No P.O. boxes please)

Daytime Phone (  )

Credit Card Type or Personal Check (circle one)

MC VISA AMEX CHECK

Credit Card Number

Expiration Date

Signature

Mail to: CheckFree Software  
P.O. Box 897  
Columbus, Ohio 43216

Please allow 14 days for delivery on mail orders. **MAC 4**



## PREVENT MACINTOSH THEFT!



### MacKali Security System

Heavy duty 10' steel cable secures and locks computer, printer, other equipment, up to 4 components. The unique **MacKali** system includes 2 brackets that snap into existing slots on the Macintosh or its peripherals. Additional hardware included for other peripherals that can be secured using existing screws in the equipment. **Internal component security:** **Kali**™ fasteners secure rear panel of CPU preventing unauthorized removal of internal boards and hard drives. When the cable is passed through the fasteners the screws are concealed. When the cable is passed through all the fasteners the Macintosh system can be secured to the desk.

List price \$39.95 plus shipping. Please specify **Mac**, **Mac Plus**, **Mac SE**, or **Mac II**. Quantity pricing also available. Money back if returned in 30 days. Purchase orders accepted. Send for catalog.

**Kali** security systems also available for most computers.

**Secure-It, Inc.** 18 Maple Court • East Longmeadow, MA 01028

1-800-451-7592

Dealer inquiries invited.



Circle 239 on reader service card

technical and customer support—as well as an exclusive developer area. The upload areas feature many examples and external procedures for enhancing 4th Dimension databases.

*Ron Dell'Aquila*

*Acius*

*Cupertino, California*

### DiskLock Encrypts

I enjoyed reading Cheryl England Spencer's article on data security in the January 1990 issue of *Macworld* ["Special Report: Data Safety"]. However, the chart on page 145 was inaccurate. It showed that DiskLock, published by Fifth Generation Systems, does not provide data encryption.

As stated in the article, DiskLock uses a proprietary encryption system to encrypt fields, folders, and applica-

tions. Additionally, it encrypts subfolders within a folder, overwrites the original file (so that file-recovery programs cannot get data you thought was securely locked), and optionally re-encrypts all decrypted files at shutdown time.

*David Shayer*

*Fifth Generation Systems*

*San Carlos, California*

• • • • •

Letters should be mailed to *Letters*, *Macworld*, 501 Second St., San Francisco, CA 94107, or sent electronically via CompuServe (70370,702) or MCI Mail (294-8078). Include a return address. We regret that, due to the high volume of mail received, we're unable to respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*. M

Macworld says,  
"...a fine unit at an attractive price."  
—Macworld, December 1989

# A special offer of only \$795\* on the most affordable tape system you can own. And we can back it up.

Sooner or later your Macintosh will need the security of data back-up. So the question is, which method? Removable disk media is too expensive. Floppies are too slow. And some systems/media are too volatile.

That's why the Braemar SX40 Data Cartridge Sub-system makes sense. There's no faster, safer method of back-up than cartridge tape. And now, the Braemar SX40 makes it affordable.

Braemar is a leading manufacturer of tape-based systems for the OEM marketplace. In fact, we make many of the drives sold by our competition.

So obviously we can back our claim. And build it for less.

**TO ORDER THE SYSTEM THAT  
BACKS YOU UP, CALL.**

**1-800-328-2719**

11400 Rupp Drive, Burnsville, MN 55337  
(612) 890-5135 Fax (612) 890-0791

\*This special price expires June 30, 1990 and is not valid with any other offer. \$995 suggested retail price. 60Mb per Cartridge Capacity. The SX40 uses the DEI or 3M Series 2000 Data Cartridge.

"A WORLD LEADER  
IN DATA  
STORAGE TECHNOLOGY"

**Braemar**



New  
60 Mb  
Version

Dealers Circle 41 on Reader Service Card

End Users Circle 217 on Reader Service Card



# Who says SuperPaint 2.0 is so great?

"...for plain old drawing and painting, you can't beat SuperPaint."

Erfert Fenton, **Macworld**, August 1989.

"SuperPaint 2.0 is, without a doubt, the best upgrade I've ever paid for."

Dan Gookin, **ComputerEdge Magazine**, March 10, 1989.

"SuperPaint remains the best black and white graphics program around."

Laurie Wigham, **Publish!**, August 1989.

"I've decided it's a better overall product than Canvas... SuperPaint has more to offer."

Robert Art Morgan, **ComputerEdge Magazine**, June 30, 1989.

"...one of the most intuitive implementations of Beziers I have seen."

Carlos Martinez, **MacUser**, July 1989.

"SuperPaint offers quantity, quality, and depth in each of its options."

DataPro's Microcomputer Lab staff, **DataPro Research Letter**, April 1989.

"It's a godsend for simple art."

Tom Thompson, **BYTE**, June 1989

## They Do.



SILICON BEACH  
SOFTWARE

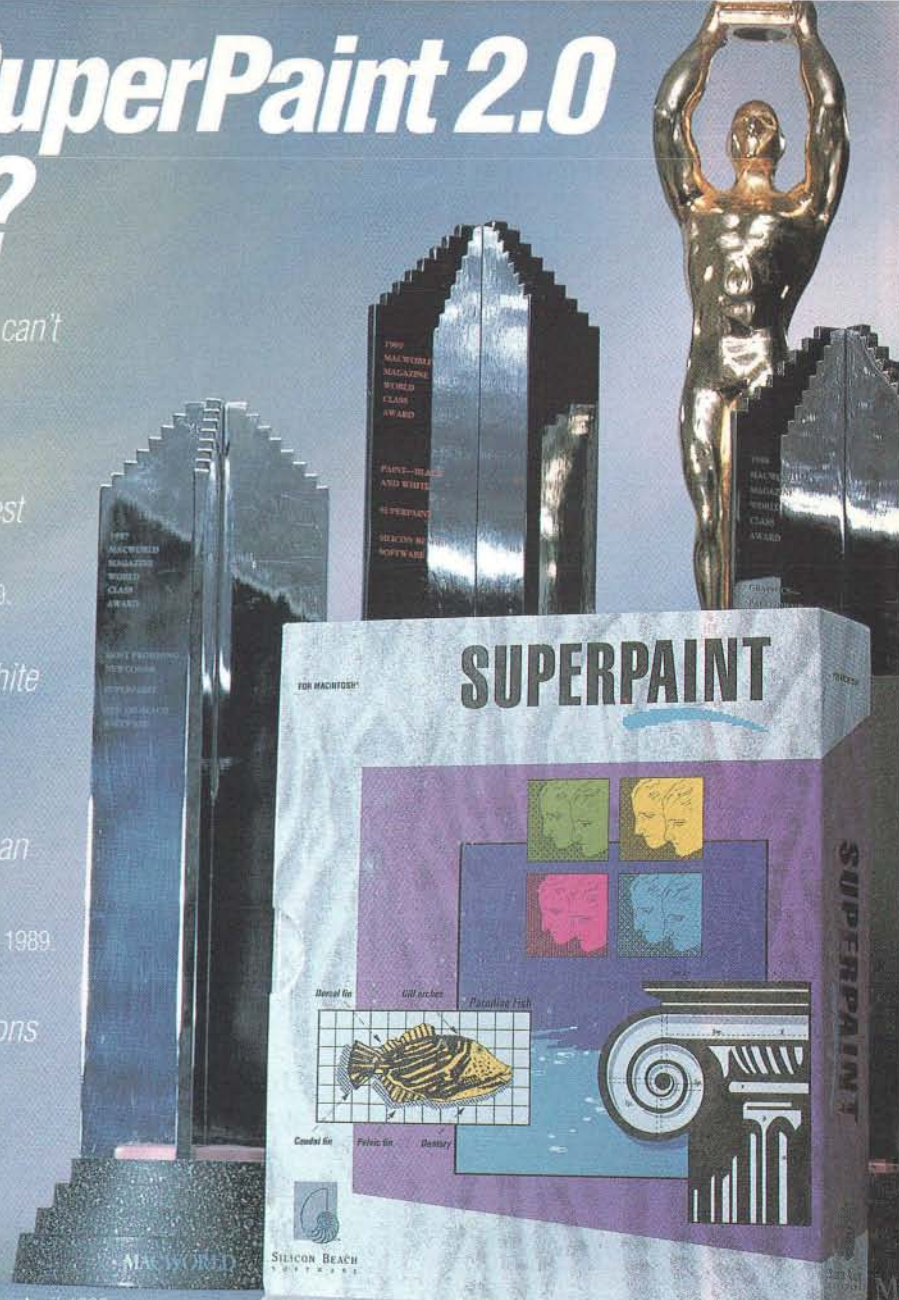
# SUPERPAINT

It just works better.

**Suggested Retail Price \$199. Upgrade \$50 plus tax and shipping. To upgrade, call or write Silicon Beach.**

System requirements: Macintosh Plus, SE, SE/30, II, IIx or IIcx, System 6.0 or later. The Silicon Beach Software logo is a trademark of Silicon Beach Software, Inc.  
**Silicon Beach Software, Inc. • 9770 Carroll Center Rd., Suite J, San Diego, CA 92126 • (619) 695-6956**

Circle 266 on reader service card



### AWARDS

1986  
InfoWorld Product of the Year - Presentation Graphics  
Macworld World Class Award - Most Promising Newcomer

1987  
MacUser Eddy Award - Best New Graphics Program  
Macworld World Class Award - Best Graphics Program

1988  
Macworld World Class Award - Best B&W Paint Program

1989  
Publish! Readers' Choice Award - Best Macintosh Paint Software



# If You Use These....



Let's face it. Although Caere® nearly eliminated EKS (Excessive Key Strokes®) with the introduction of *OmniPage*™, there are still businesses out there who continue to use slightly *outmoded* tools, seriously limiting the power of their MS-DOS® and Macintosh® computers. Sound familiar?

Now there's a choice. You can enter data using these artifacts of the past, or choose *OmniPage*—which allows you to enter hundreds of pages of data quickly and easily—up to 1500 words per minute. And all for significantly less money than you ever thought possible. You can *choose* *OmniPage*, or learn to type 25 words per second.

And if that doesn't convince you, consider this: *OmniPage* has just

gotten even more powerful, with the addition of a few new family members.

Caere has never been a company to mince words so we developed *OmniSpell*™, a spellchecker that contains 100,000 words that works with *OmniPage* to correct all of the spelling errors in your scanned documents, even those in the original work—going beyond 100% page recognition to deliver the most accurate scanned text. Working with *OmniPage*'s Transitional Editor,™ *OmniSpell* is the only spellchecker designed specifically to work with OCR® software.

With *OmniDraft*™, draft mode documents don't have to come out looking like electronic alphabet soup. At last, page recognition software that

can read output from dot matrix printers—in an instant.

Not to be outdone by other prominent family members, *OmniProof*™ makes the differences *perfectly clear*, by providing side-by-side comparisons of your most critical documents. *OmniProof* works exceptionally well for anyone developing lengthy desktop published documents or manuals. Even opposing attorneys will have little opposition to the way that *OmniProof* allows them to review legal contracts and documents. *OmniProof*, the one tool to insure the best final outcome, no matter what side of the bar you happen to be on!

And with our most recent family addition, *OmniTrace*™, you can now



# Consider These



recognize pictures and images the way *OmniPage* lets you scan words—flawlessly. Especially useful for graphic designers, architects and those in business who are concerned with *image*, you can bring any picture into focus. Even complex business forms. Scan black and white images and instantly convert them to PostScript® format for high-res output. Use *OmniTrace*'s sophisticated editing tools to refine any shape, curve or line. It's the one software tool from Caere that allows you to put your best image forward.

Caere, the company that defined *page recognition*—just expanded that definition.

**Call:**  
**1-800-535-SCAN**

**Or Write:**  
**Caere Corporation**  
**100 Cooper Court**  
**Los Gatos, CA 95030**

\*Excessive Key Strokes (EKS) has been known to cause knee quivers and thumb spasms in data entry personnel, engineers and graphic designers who work with computers.

\*\*OCR is an abbreviation used by industry experts for *optical character recognition*, an important component of *page recognition*.

## omniPAGE™



**CAERE®**

The Caere name and logo are registered trademarks of Caere Corporation. OmniPage, OmniTrace, OmniSpell, OmniDraft, OmniProof and Transitional Editor are trademarks of Caere Corporation. Apple and Macintosh are registered trademarks of Apple Computer, Inc. MS-DOS is a registered trademark of Microsoft Corporation. PostScript is a registered trademark of Adobe Systems Incorporated. © Copyright 1989, Caere Corporation. Printed in the USA. All rights reserved.

Circle 230 on reader service card





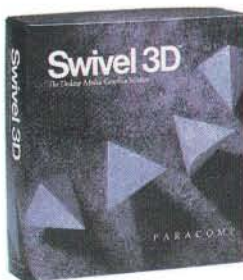
Illustration created in Swivel 3D by Joe Sparks.

# EXPRESS YOURSELF WITH BETTER GRAPHICS

Swivel 3D™ is the best-selling, three-dimensional Macintosh program for anyone who needs high-quality graphics for product design, scientific visualization, animation, and graphics for desktop publishing and multimedia presentations.

Easy to learn and use, Swivel 3D comes with an extensive library of 3D art including alphabets, human figures, robots and additional shapes and figures.

By instantly changing the lighting, casting a shadow, or placing 2D art over a 3D surface, Swivel



3D gives you the freedom to explore all kinds of dramatic possibilities. Quickly and easily.

What's more Swivel 3D works with your other graphic programs because it supports all the popular formats: Encapsulated PostScript® for Adobe Illustrator; PICT2 for Studio8; PixelPaint and PageMaker; PICT for MacDraw II; and the animation format — PICS — for MacroMind Director.

Express yourself. Call (415) 543-3848 today. Demo disks are available for \$10.

P A R A C O M P

Swivel 3D is a trademark of Young Harvill/VPL Research, Inc. Other brands and product names are trademarks or registered trademarks of their respective holders. © 1989 Paracom, Inc.

**Circle 229 on reader service card**



# ART BEAT

by Deborah Branscum

This column examines the tools and the talent behind Macworld's graphics and discusses the techniques that make them possible

**Artists:** *Macworld* designer Arne Hurty created the dramatic cover image, referring to gray-scale software, based on a concept by art director Joanne Hoffman.

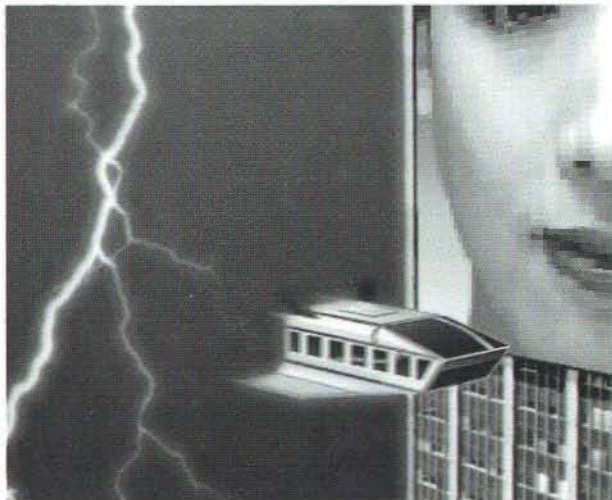
**Tools:** The hardware included a Macintosh IIfx, a Radius Color Display System with a Radius QuickColor Graphics Accelerator, 8MB of RAM, a 100MB external SuperMac DataFrame hard disk, a Siemens ST800 gray-scale scanner, and a Barneyscan slide scanner. The software used was Adobe Photoshop, Aldus FreeHand, and Capture from Mainstay.

**How It Was Done:** Hurty used four transparencies from a photo service, an illustra-

tion in FreeHand, and typeset Japanese text to create a cover image that conjures up the illusion of a *Blade Runner*-like future.

To get started, Hurty used the Barneyscan scanner to scan in two 35mm slides of buildings as TIFF files that were placed into a Photoshop file. Too small as they were, Hurty duplicated both buildings to double their width. Next he selected the background of the Photoshop file, then copied and pasted the lightning (which had been scanned in earlier) inside the background.

Art director Hoffman wanted to establish a low-resolution look for the face used on the cover. Hurty opened the scanned image in Photoshop and *sampled down* the image to reduce its total number of pixels. Then he resampled it to a larger size using the *near-* (continues)



**EFFECTS**  
*Specialist*  
Exactly What  
You've Always  
Expected...  
from the Leader in  
Font Enhancement  
Software!

## Featuring:

- 110 effects, including circles, arcs and motion effects
- Absolutely no programming
- On-screen representation (WYSIWYG)
- Output on dot matrix printers
- Color support
- Cut, paste and export to most other programs
- Use with any PostScript™ or bit-mapped font
- Up to 4999 point size
- Tiling capabilities
- Complete background generator/editor
- Kerning
- Horizontal scaling (stretch/condense)
- Rulers (picas, inches, decimals, centimeters and pixels)
- Skew/rotate
- Character control (opaque to transparent)
- Save multiple EPSF files

...all this and much, much more in one complete package for only \$249.95!

Output on any printer  
...\$100 to \$100,000  
...Dot Matrix to High  
Resolution Laser Printers.

See your local dealer or contact:



**POSTCRAFT**  
INTERNATIONAL INC.

27811 Avenue Hopkins, Suite 6, Valencia, CA 91355  
(805) 257-1797  
Dealer inquiries invited



# Printer Connectivity Is What We Do Best



**JetLink Express:**™ The ultimate Macintosh® software printer driver for the HP LaserJet™ series, HP DeskJet™ series and HP compatible laser printers. JetLink Express includes 13 outline fonts. Features supported include: reduction, enlargement, gray scales, and more.

**PrintLink Collection:**™ A series of Macintosh software printer drivers which support the Epson LQ & FX series, Okidata 300 series, Panasonic 1000, 1100 and 1500 series, NEC Pinwriter series and Diconix 150 & 300. Supports Adobe Type Manager.™



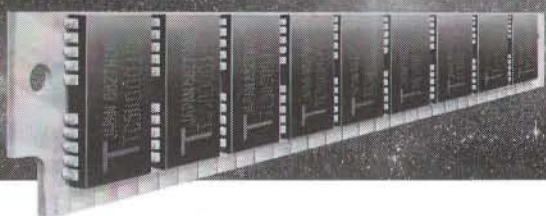
P.O. Box 1865, Point Roberts, WA 98281  
Inquiries: (604) 291-9121 Orders: 800-663-6222

See you at MacWorld  
Brooks Hall  
Booth #5210

JetLink Express, PrintLink Collection and the GDT Starburst logo are trademarks of GDT Software Inc. All names and logos are trademarks or registered trademarks of their respective holders.

Circle 439 on reader service card.

## DIAMOND PAC



### SINGLE IN-LINE MEMORY MODULES for Mac Plus, SE, SE/30, II, IIx, IIsx, IIfx

- 256K, 1M, 4M
- Low Profile SMD CMOS
- Easy to Install
- Lifetime Guarantee
- Static Protected
- Same Day Delivery

Expand your Mac memory by 1 to 32 megabytes with Diamond•Pac top quality SIM modules from AMDI.

**AMERICAN MICRO DISTRIBUTORS INC.**



714/840-5560 • 800-243-6654  
FAX: 714-846-0570

16897-D Algonquin, Huntington Beach, CA 92649

MC VISA AmEx Discovery

All Mac models listed above are trademarks of Apple Computer Corp.

**INVESTMENT OPPORTUNITY** - AMDI is a wholly owned subsidiary of Logicon, Inc. with stock currently offered "over the counter". For more information about this excellent investment opportunity contact your broker or call AMDI directly.

Circle 403 on reader service card.

est neighbor interpolation command under the Edit and Preferences menus in Photoshop. That interpolation creates groups of four or more pixels that are the same color, resulting in a low-resolution look from what is actually a high-resolution image.

Because Photoshop skews an image but doesn't offer true perspective, Hurty was forced to compress the face vertically in tiny increments. "The hardest part of creating the cover was producing the effect of perspective," says Hurty. He compressed the face from right to left, from least distortion to most distortion, using the Stretch command under the Effects and Image menus. Then he pasted the face onto the building on the right. Hurty followed the same process for the Japanese text, which was set at a service bureau and then scanned in with the Siemens device. (The kanji reads *Macworld* phonetically.)

For both the face and text Hurty selected the Fringe command from the Select menu to create a 1-pixel-wide black outline around the elements. He also added drop shadows. A graduated fill was also used with the text, and texture was placed behind the kanji by selecting the Noise Filter from the Image menu. Hurty blurred the texture with the Blur command, also from the Image menu, and got softer edges by selecting Feather from the Select menu.

The designer created the cover's spaceship in two hours with Aldus FreeHand, then set the program to best-possible screen resolution by selecting Better Display in the Document Setup dialog box. He captured the illustration and saved it as a PICT file using a utility called Cap-

ture. Then the bitmapped image was placed in the Photoshop file and resized. Hurty selected the spaceship and added a Motion Blur filter for a motion effect.

Several other details demanded attention. In doubling the high rise on the right, Hurty also duplicated a shadow; he eliminated it by copying and pasting a pristine panel from the building. And the background lightning was extended so it would bleed off the top of the cover. Hurty used Photoshop's brush tool in Lighten Only mode.

Blotches in the background were a special challenge. Initially Hurty tried to smooth out the blotches by using the eyedropper tool. That didn't work, so Hurty selected the background using the magic wand and lasso tools from the tools palette. Then he created a radial fill using the blend tool, with the foreground color set at 65 percent gray and the background set at 100 percent black. He worked from the center to create a starburst-like effect. Then Hurty applied the Noise Filter to the entire background. "The Noise Filter breaks up the gradation evenly and helps avoid banding," said the designer. "Then I applied the Gaussian Blur filter to further smooth out the background."

The completed image took about 33 hours to create (including stuffing the file and sending it out for comps). More than 8MB in size, the image was printed at a resolution of 142 pixels per inch. The cover was digitally separated using Photoshop and output on an Afga Compugraphic 9600S. Although simple black-and-white printing could have been used, four-color separations were chosen because they create richer blacks. ■



# Beyond Reality.

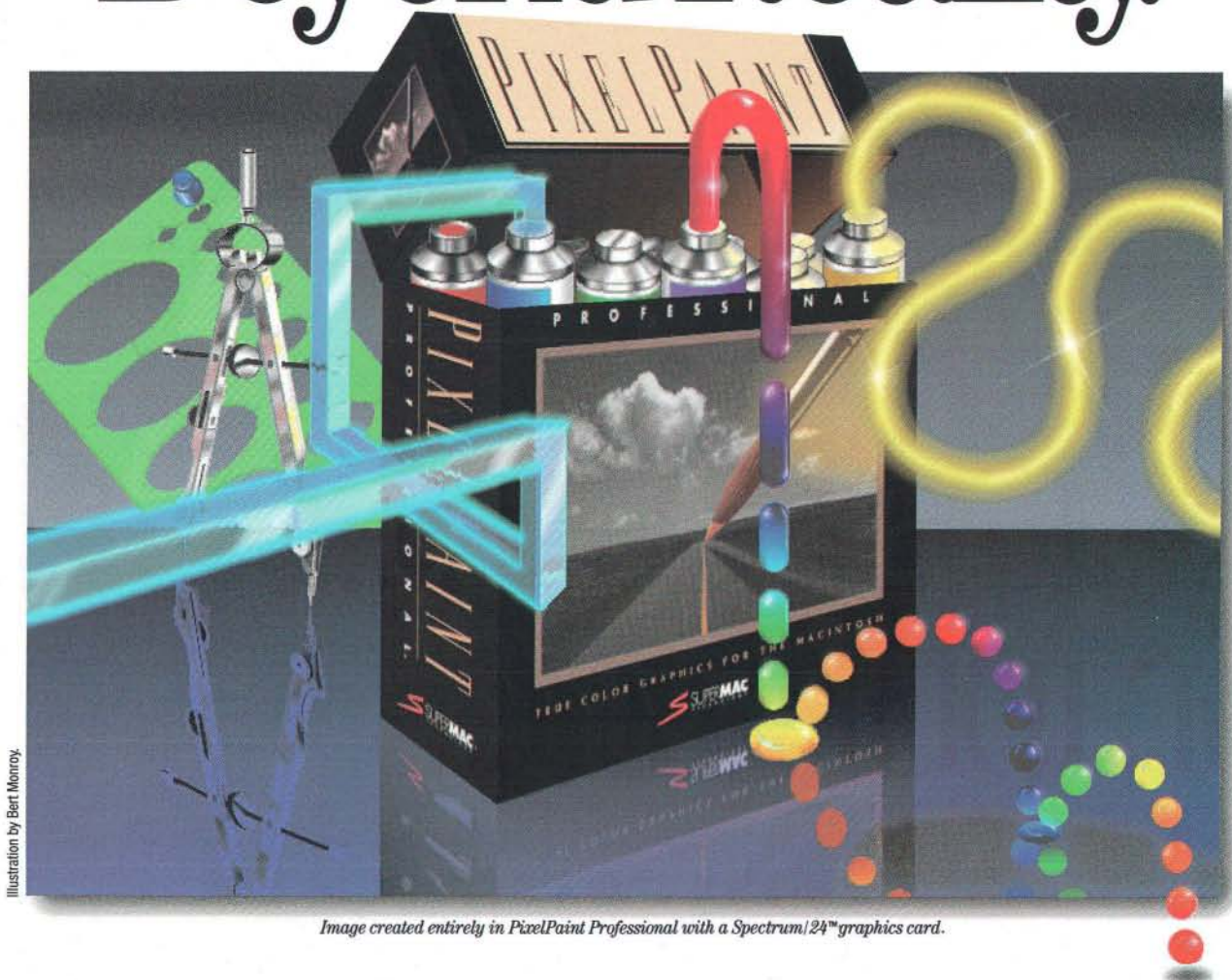


Illustration by Bert Monroy.

Image created entirely in PixelPaint Professional with a Spectrum/24™ graphics card.

As a designer, you need tools as unlimited as your imagination. You need PixelPaint Professional™, the first True Color paint program. It lets your imagination tinker with reality. Not just image processing, but image *creation*.


PixelPaint Professional gives you all the traditional paint tools you're used to, and a vast selection of advanced tools for dazzling special effects. Like ultra-smooth graduated fills and anti-aliasing. Full transparency control. Dynamic masking. And the most sophisticated airbrush around. You can choose from a nearly endless spectrum of custom palettes, and seven different color pickers. Including 4-color process, RGB, and PANTONE®\*Color.

And PixelPaint Professional is a universal paint program. It supports any color depth from 8- to 32-bits—so you don't have to buy new software when you upgrade from 8- to 24-bit hardware.

So if you design anything on the Macintosh®, then take your imagination beyond reality with PixelPaint Professional. Ask for it by name at your local SuperMac Software reseller.







# A “Breakthrough” Graphic Tool for Macintosh Artists

The Wacom cordless, pressure-sensitive stylus.



November 26, 1989  
Wacom SD-421L





The Mac has always had great potential in graphic arts. But until now, no one has really provided a tool to unleash it. There has always been some form of mechanical trade-off imposed by input devices that inhibited artists from letting their imaginations flow naturally.

Now, Wacom introduces a totally "real" graphic tool, one that lets you interact with the Mac as intuitively as you would with a canvas. With Wacom's cordless, pressure-sensitive stylus your will is converted through manual pressure to line width, spray, color change and other programmable effects. This allows you to create "real time" artistic images free of the artificiality and limitations of other input devices. And since the Wacom stylus has neither cable nor battery, it is also ultra-light and maintenance free.

Wacom, a leading name in computer graphics worldwide with proven man-machine interface technology, invites you to a new era in Macintosh graphics with a promise:

Once you experience it, you'll never look back.

**Performance/Specifications** • Resolution: 1,270 lines/inch (0.02mm) • Accuracy:  $\pm 0.01$  inch ( $\pm 0.25$ mm) over entire active surface • Maximum reading speed: 205 points/second

**Wacom SD-Series Digitizers** • A0 to A5, square or rectangular • Surface types: standard, magnetic, electrostatic, or transparent menu panel • Pointing devices: Pressure-sensitive, stroke-type or nonstroke-type cordless stylus, 4-button or 12-button cordless cursor.

# WACOM

**WACOM Inc.**

West 115 Century Road, Paramus, NJ 07652, U.S.A.  
Tel: (1) 201-265-4226, Fax: (1) 201-265-4722

**WACOM Computer Systems GmbH:**

Hellersbergstrasse 4, D-4040 Neuss 1, West Germany  
Tel: (49) 2101-16001, Fax: (49) 2101-101760

**WACOM Korea Co., Ltd.**

371-36, Karibong-Dong, Kuro-Gu, Seoul, 152-020 Korea  
Tel: (82) 2-869-5595, Fax: (82) 2-869-1241

**WACOM Co., Ltd.**

**International Division**

4-1-12, Ikebukuro, Toshima-ku, Tokyo, 171 Japan  
Tel: (81) 3-985-0097, Fax: (81) 3-985-8636

WACOM is a registered trade mark of WACOM Co., Ltd.  
Copyright © 1990 by WACOM Co., Ltd. All rights reserved.

**Circle 507 on reader service card**









# Out on a Sim

EXPLORING THE NATURE OF SIMULATION VERSUS REALITY

BY STEVEN LEVY

I like to think that it was something more than idleness that recently led me to lock myself in a bedroom for 14 consecutive hours, interacting with a software program called SimCity. A worried human being pounded on the door—"Are you

all right in there? Are you all right?"—but I must admit that human beings of the corporeal persuasion were the farthest thing from my mind.

Instead, I was concerned about, well, pseudo-human beings. Little *faux* creatures that my screen didn't even display, but only implied. I could see evidence of their existence, though, in Lower Gomorrah, the city I controlled. These virtual people, called Sims, moved into houses and often upgraded them to nicer homes. Sometimes, when the neighborhood got too crowded, they let the places go to seed. They drove around in little cars that got stuck in little traffic jams, at which time tiny helicopters making not-so-tiny chopping noises hovered overhead, announcing gridlock. The Sims even attended football games in the stadium they had demanded for this burgeoning burg—the games lasted about five seconds (Note to NFL: hire Sim referees), and then the Sims would jump into their cars and zip over to another traffic jam. It was up to me, the city planner who had omnipotent control over zoning, budgeting, tax rates, and municipal construction in Lower Gomorrah, to keep the Sims happy. Otherwise they'd move out, and my personal metropolis would no longer thrive.

Anyway, that's the scenario of



Some call him an artist, but SimCity creator Will Wright demurs.

SimCity, a computer game you've probably heard about: it has sold lots of copies, and last December it won the highest honor on earth, inclusion in the *Macworld* Game Hall of Fame. But what brings me to address it at this late date is a mental obsession I've been grappling with lately, one that is proving as compelling a passion as the one I indulged in my SimCity binge.

## Accepting No Substitutes

The obsession deals with the nature of computer simulation itself. Everything boils down to this: When I was running Lower Gomorrah, something

that looked like a city and felt like a city, was I really manipulating anything that bore formal resemblance to a city? I hear that supposedly legitimate city planners are tinkering with SimCity; it's being used in college courses as an educational modeling tool. Is this a valid practice, or are these folks tricked by an illusion? How relevant is the imitation to the real thing?

Obviously, an imitation of a thing is not the same as the thing itself. It's a metaphor, something that emphasizes a particular similarity of one aspect of the original to the object in question. When you compare a colleague to a pig, probably you're referring to that person's undisguised eagerness to sate various hungers, or perhaps an unfortunate lack of cleanliness. Chances are you're not implying that the person walks on all fours.

But it is the nature of computer simulation to generate a fuzziness at the edge of metaphor. If we can extract some nugget of validity from using SimCity—if it has any value at all to people thinking about cities and zoning—how can we know how *much* it applies? And how do we know when the metaphor does not apply at all?

We need to understand this problem in order to make sense of a new breed of simulation, one that attempts to give us a political understanding of an aspect of the world. Hidden Agenda, another terrific Mac Game (*continues*)



# MacPAIN RELIEF

**Quickor Kare**  
EXTENDED SERVICE POLICY  
OR **APPLECARE**

**THE CHOICE IS EASY!**

- 1 COST** Quickor Kare gives **TWICE** the coverage at **HALF** the cost!
- 2 SERVICE** Quickor Kare provides nationwide **OVERNIGHT REPLACEMENT!**
- 3 VALUE** Quickor Kare is the **ONLY** extended service policy that actually **REPAY YOU!** (Call for details!)
- 4 COVERAGE** Quickor Kare protection is available on **ALL Mac products and peripherals!**

**Mac Friends**

WATCH FOR OUR ADS ON PAGES # 28, 250, 193

Quickor Kare is available on **ANY** new purchase (within 90 days) from participating dealers.

**CALL NOW**  
**800 331-1322**

© Compumart, Inc. 1990. Mac, Macintosh, AppleCare™ Apple Computer, Inc. Quickor Kare™ Compumart, Inc.

Circle 109 on reader service card.

Hall of Famer released last year, puts the user in the Presidential Palace of Chimerica, a virtual country in Central America. As the new Presidente, the user is forced to balance the demands of representatives of competing factions. There are threats from the left and from the right, and all too often the user will fail to keep the dogs of war at bay. The horrified user may be the victim of a coup, or assassinated. Or the user may be shocked to find him- or herself a survivor, but one in charge of a soulless, overcompromised nation. In any case, the intent is to give the user the impression that Central American reality is similar to the reality of Hidden Agenda. If not, the learning experience is misleading, perhaps even intentionally. Simulations of this nature, after all, hold potential for insidious propagandizing.

It's not an idle pursuit to wonder about the relationship of simulation to reality. Simulations of this sort (one hopes more sophisticated) are run on government computers to help determine national policy on big issues like national defense and budgeting. So we have an interest in finding out the relevancy of such simulations, and their potential for transmitting bias on behalf of the designer.

#### Yeah, but Is It Art?

To shed some light on this, I visited Jim Gasperini in his New York City apartment; he's the guy who, along with Trans Fiction Systems, designed Hidden Agenda. He assured me that he had not stacked the deck to support a particular political bent. As evidence he claims that the game has been attacked from people on both ends of the political spectrum: leftists complain that the game is too pragmatist, righties think Gasperini is a pinko. But he acknowledged that there is no way he could create a simulation free of any of his biases. After some discussion he admitted that his view of the political situation was indeed reflected in Hidden Agenda: he believes Central America is a complex conundrum where compromise is inevitable, and so it is in the game.

Of course, in order to endow the simulation with authenticity, Gasperini had to learn a lot about the subject. Ultimately, he had to winnow out

some of the complexities: out went various ethnic tensions, and any aspects of Chimerica's relations to its neighbors. Meanwhile, he kept concepts like land reform, death squads, and relations to the superpowers. "You strive to maintain verisimilitude, but you don't want to sacrifice comprehensibility," Gasperini explains.

Now hard at work writing *Pestroika*, a simulation of an Eastern European country, Gasperini made an interesting claim. Creating simulations—choosing which aspects are essential to include—is an art form, he said. Novels are a form of simulation, using paper. Movies are simulations that use images. Computer simulations are simply a more interactive form of narrative. Well, I asked him, what about *SimCity*, a simulation that has no pretense to narrative, but which allows you some control over a silicon organism called a city? Is its creator, Will Wright, also an artist? "Will doesn't think of himself as an artist," said Gasperini. "I'm trying to convince him he is."

#### The Wright Stuff

I figured out that I should ask Will Wright for myself, so I ventured to the programmer's study, in his Berkeley, California, home. Like Gasperini, Wright does not claim that the prodigious research that went into his particular simulation—he read 50 books on city planning—means that one can extrapolate too much from *SimCity*. "I wouldn't want to predict a *real* city with it," he says. Yet he notes with some pride that city planners have embraced the game as a tool for understanding cities, and that Maxis Software has published a teacher's guide to the program.

In doing simulations like *SimCity*, Wright sees himself as a popularizer of otherwise arcane subjects. "SimCity has been more educational for me than for the users," he says. "I guess I'm more of a synthesizer [than an artist]."

We talked for a while about the nature of simulation and agreed that after a certain point something like *SimCity* has a life of its own. It *is* a city—just not a real one. And that is at the heart of my interest in the nature (continues)



# PRINTS GREAT. LESS SHILLINGS.

## THE NEW \$1399 PLP II.

**N**ow you can have everything you ever wanted in a laser printer. Without paying the price.

Introducing the lowest priced laser printer in history: the \$1399 PLP™ II from

### The Highest Quality Printing.

Because PLP II includes 6 outline font families (for a total of 22 individual fonts), its razor-sharp, clean output can be

or 10 AM to 4 PM (EST) on Saturdays. Our trained staff can answer your questions and offer advice on any of our products. (Be sure to ask for our free catalog.) Orders received by 8 PM (EST) will be shipped the



GCC Technologies. GCC developed the very first personal laser printer in 1987, and has over 10,000 satisfied users... more than everyone else combined.

Finally, a revolutionary printer at a revolutionary price. In fact, at \$1399, it's nothing short of a technological marvel.

### Personal Desktop Printing.

Three years of research and development have put the finest printer technology right on your desktop: a combination of the newest third generation laser engine, GCC's own custom designed integrated circuits, and the market's most sophisticated QuickDraw™ imaging software yet.

Features such as a silent "sleep" mode, a very user-friendly LCD display and an envelope printing desk accessory have been carefully integrated to create a laser printer that truly is personal.

shaped, scaled, and rotated to any point size — all at a full 300 dpi.

These outline fonts, combined with GCC's powerful QuickDraw imaging software, give you unlimited flexibility in producing perfect documents from such applications as PageMaker,\* Word,\* Excel,\* MacWrite,\* MacDraw,\* Persuasion,\* and Canvas.\*

### Dealer or Direct: Your Choice.

GCC has made acquiring your new PLP II just as easy as using it. If you would like to see a demonstration and purchase your PLP II today, simply visit one of GCC's authorized dealers. For the location of the dealer nearest you, call

**800-422-7777.**

To order direct from GCC, call us toll-free from 9 AM to 8 PM (EST) on weekdays,

same day via overnight delivery for only \$9.

What's more, when you buy direct from GCC we guarantee satisfaction. If after trying PLP II for up to 30 days you aren't completely satisfied, return it and we'll cheerfully refund your money.

### One Year Warranty.

PLP II carries a full one year warranty on parts and labor. We also offer repair service at any Xerox® carry-in service center, or at any one of hundreds of GCC Technologies dealers.

**PLP II. \$1399.**

We gladly accept MasterCard, Visa, American Express, or your company's corporate purchase order.

**GCC  
TECHNOLOGIES**  
Peripherals with Vision.™

GCC dealers are independent businesses and as such they may offer different prices, policies, and service arrangements. In Canada 800 263-1405 ©1989 GCC Technologies, Inc.

Circle 204 on reader service card


Ad 020047




**CRYSTAL**  
*Quest*™

**"Best Action Game  
 of 1988" -MACWORLD**

**Crystal Quest  
 WITH  
 CRITTEREDITOR™**



**EDDY  
 AWARD**



**1989 WINNER  
 Mac User**

**Best  
 New  
 Recreation Program**

Make Your Own Game!

Crystal Quest: \$49.95  
 Crystal Quest & CritterEditor: \$79.95

**Casady & Greene Inc.**  
 POB 223779, Carmel, CA 93922  
 Information: (408) 624-8716  
 Orders: (800) 331-4321  
 In CA: (800) 851-1986

Circle 134 on reader service card

of simulations. Not what they profess to address—those implicit claims to educational value or eye-opening exposure to some hitherto foreign point of view—but the separate realities they generate. Simulations are real things, in and of themselves.

And though simulations are not identical to the things they simulate, they can produce behavior that is not merely similar to things in the real world, but identical. For instance, Craig Reynolds, a graphics programmer at the Symbolics Company, has created a simulation using boids, little birdlike constructs. After much observation of flying birds in formation, he surmised certain rules for flocking, then programmed his boids to follow those rules. And without being specifically programmed to do so, the boids flew in convincing formation! Scientists studying the phenomenon now say that Reynolds's simulation does not merely imitate the behavior of real birds—in a genuine sense, *they are actually flocking*.

Since "real" behavior can come from simulation, then simulations are indeed objects worthy of examination; lessons can be drawn from them. Whether those lessons apply to other objects—"real" ones, if you will—can only be determined by experimentation. Best of all, simulations can generate insights that might one day be verified as valuable knowledge.

#### Lives of a Cellular Automaton

For support of this (not particularly original) thesis I invoke a class of simulations known as cellular automata (CA). These are simple mathematical constructs with deceptive significance. Most commonly, they begin with a checkerboard-like grid laid upon the "world." Each square is called a cell, and each cell is assigned a given state. Often these are limited to two possible states, on or off. The simulation begins by going to the next generation: depending on the state of its various neighbors, a cell may or may not change its state in this new configuration. (This is determined by a set of rules drawn up beforehand.)

The best known CA simulation is one devised by mathematician John Conway, called Life. Although the rules are insanely simple, the behavior of

the cells once the generations turn is tremendously, spellbindingly complex. Some scientists, notably Stephen Wolfram (known to some Mac users as the maestro of Mathematica), argue that this characteristic of CAs points to a profound physical understanding of the nature of the complexity in the Universe itself. More daringly, a brilliant scientist named Ed Fredkin, who once headed MIT's prestigious Project Mac artificial intelligence lab, has postulated in all seriousness that our universe, the biggest of all possible imaginable enchiladas, is itself a giant cellular automaton—a simulation.

(Incidentally, there is a wonderful set of computer programs published by Autodesk called Rudy Rucker's Cellular Automata. Tragically, Autodesk offers these marvels only in the MS-

**S**imulations can  
 produce behavior  
 identical to that of  
 the real world

DOS format, and the program is useless to Mac owners.)

Are we getting far afield here? No—this leads to the ultimate justification for my SimCity binge. SimCity, it seems, shares many features of a deeply interesting cellular automaton. The various zones of the city adjust their behavior partially as a consequence of the state of their neighbors. Just as CAs can give us clues to the nature of behavior, so can SimCity reveal to us some of the hidden agendas, so to speak, of cities. When I asked Will Wright whether SimCity had uncovered any such aspects, he said, yes, there was one thing in particular that routinely occurred in the simulation, even though it had never been programmed into it. This was the deterioration of some inner-city areas when they became congested or surrounded by an inhospitable industrial area. Slummification. Just as in real cities, there was a principle that was triggered when conditions reached a certain point.

(continues)



# FOR THOSE OBSESSED WITH PERFORMANCE, A HARD DISK THAT MATCHES YOUR OBSESSION.

**T**oday there are any number of peripherals designed to push the performance envelope of the Macintosh.<sup>®</sup> But none pushes harder than an ingenious new series of hard disks from GCC Technologies.<sup>™</sup>

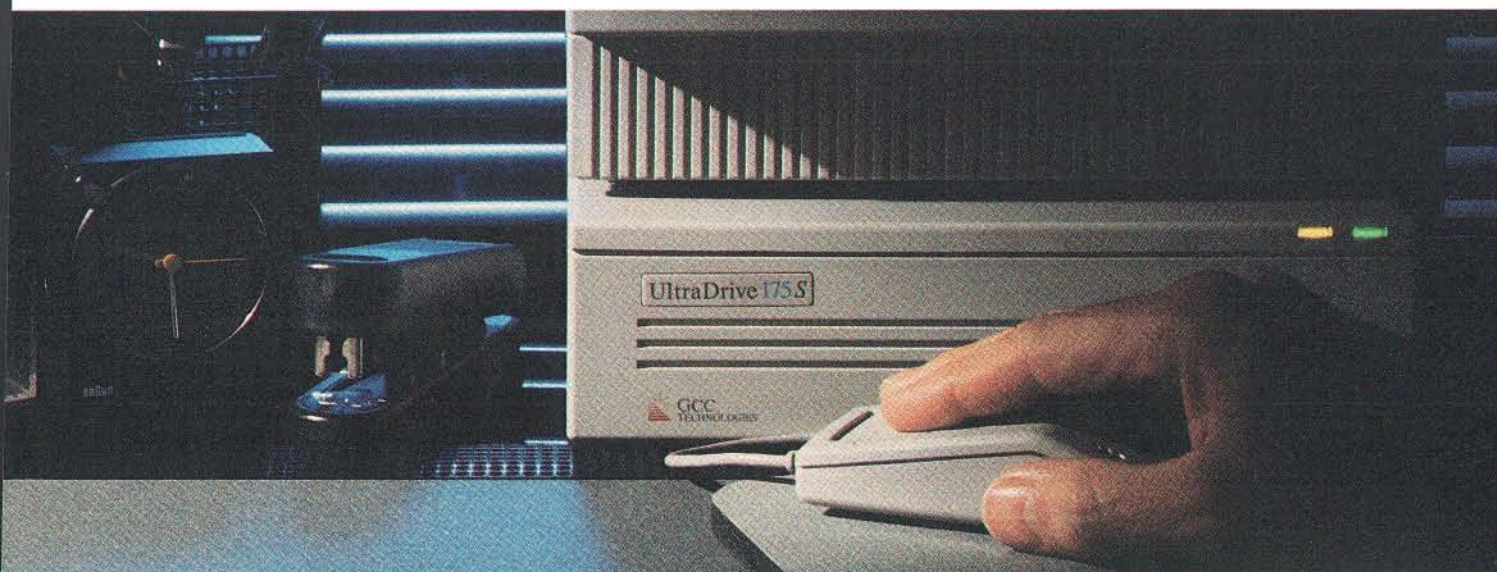
utilities package featuring data recovery, deleted file recovery, DES encryption security, and a powerful backup program.

You also get UltraWare,<sup>™</sup> GCC's own software package which includes a disk

return it and we'll cheerfully refund your money, no questions asked.

Two Year Warranty.

Finally, UltraDrive S carries a full two



Its name is UltraDrive<sup>™</sup> S: a complete family of 40 to 175 MB hard disks that relegates all others to the status of underachievers.

## No Hard Disk Works Faster.

Simply stated, UltraDrive S is the fastest hard disk in its class. A distinction made possible by an on-board RAM cache that speeds access to recent or sequential data requests. By a capability called 'one-to-one interleaving' that feeds you data as fast as your Macintosh can take it. And by amazing average access times as low as 12 ms.

All of which is good news indeed for anyone who works with large spreadsheets, sophisticated graphics or other data-intensive applications.

## No Hard Disk Works Smarter.

Each UltraDrive S hard disk comes with an extensive software library ordinarily retailing for several hundred dollars. Including Symantec's<sup>®</sup> SUM II, a comprehensive

management program featuring true SCSI partitioning (Disk Manager<sup>™</sup>), a rapid print spooler (QuickSpool<sup>™</sup>), and over 3 MB of selected shareware software.

In sum, to anyone obsessed with performance, UltraDrive S provides an ideal vehicle for self-expression. And at a price over 35% less than Apple's<sup>®</sup> hard disks, it even performs better as an investment.

## Toll-Free, Hassle-Free, Risk-Free.

To order, call 800-422-7777 from 9 to 9 on weekdays, or 10 to 4 Saturdays. Our expertly trained staff will be glad to answer questions, provide technical support, and offer advice on choosing and getting the most out of any of our products. Ask for our free catalog. When your order is received by 8:00 PM (EST), it will be shipped the same day via overnight delivery for only \$9.

What's more, we guarantee satisfaction. If after trying UltraDrive S for up to 30 days you aren't completely satisfied, just

year warranty covering both parts and labor (ask for details). But that's not the only way we ensure your peace of mind. We also offer repair service at any one of hundreds of GCC Technologies dealers.

## The UltraDrive S Series.

MODEL	EXTERNAL	INTERNAL
UltraDrive 40 S	..... \$799	..... \$649
UltraDrive 80 S	..... \$1099	..... \$949
UltraDrive 100 S	..... \$1299	..... \$1149
UltraDrive 175S	..... \$1799	..... \$1699

For the name and location of the GCC Technologies dealer nearest you, or

To Order, Call 800-422-7777.

We are glad to accept MasterCard, Visa, American Express, or your company's corporate purchase order.

 **GCC TECHNOLOGIES**  
Peripherals With Vision.<sup>™</sup>

In Canada, (800) 263-1405 © 1989 GCC Technologies, Inc.


Circle 308 on reader service card

Ad 020044



Macintosh computer and new Kodak Diconix printer

**WHAT'S  
ONE  
WITHOUT  
THE OTHER?  
KODAK**







***Introducing the Kodak Diconix M150 plus printer. Don't take a Mac anywhere without one. Now you can print out a sudden revision, a quick letter, an instant overhead anywhere!***

Just think of all the things you can do if you have a printer with your Macintosh computer. Those last-minute improvements on the presentation. And the letters and reports that could be on their way right now. Then there's the sheer convenience of being able to read what you write before you get back to the office.

It's all easy if you have the new Kodak Diconix M150 plus printer.



It's easy to carry (3.1 lbs.), prints PostScript®-quality outline fonts using Adobe Type Manager™ software, as well as presentation graphics. And it works as well on the desktop as it does on the road. No printer in the world is quieter, smaller or lighter.

Go ahead, give in to temptation, call for the name of your nearest dealer in the U.S. or Canada: 1 800 255-3434.

*The new vision of Kodak*





# This month we

Up here in the north country we think all our products are winners. Nevertheless, we are pleased as punch for those of them who were nominees, honorable mentions, and winners in the 5th annual *MacUser* Editors' Choice (Eddy) Awards. You'll find many of them pictured in our product listing this month.

Last month we announced that our order line is now open until 1 AM. Well, this month's news is that our toll-free number (800/334-4444) now works in Canada. So all of you who live even further north than Marlow can call us toll-free. Pretty cool, eh?

The majority of products we carry are covered by 30-60 day Money Back Guarantees (as listed here in red). If you're not happy with one of those products, call us for an authorization and return it *with all of the original packaging* within the guarantee period for a refund check (or credit on your credit card). We reserve the right to limit quantities on such returns.

Version numbers in our ads are current at press time. You will receive the latest version when you order, because that's all we sell. Also, all software is not copy-protected, unless indicated otherwise by (CP). Finally, please refer to the four-digit number next to the product when ordering. Thanks!



**Custom Applications ... 30 day MBG**  
*Freedom of Press 2.1A*—1990 MacUser Editors' Choice Award for Best Graphics/Publishing Utility and Honorable mention for Most Significant Software Product. "Brings PostScript-printing capabilities to non-PostScript output devices" ..... \$259.

## BUSINESS

### ★Aatrix Software ... 30 day MBG

- 5872 Checkwriter II 2.2 ..... 37.
- 3976 Aatrix Payroll 3.5 ..... 109.
- 3958 Aatrix Payroll PLUS 3.1 ..... 175.
- 4021 Aatrix TimeCard 2.1 ..... 119.
- 4020 Aatrix TimeMinder 2.1.2 ..... 175.

### ★Abacus Concepts ... 30 day MBG

- 4482 StatView SE+Graphics 1.03 ..... 179.
- 4481 StatView II 1.03 ..... 279.
- 5840 SuperANOVA 1.1 (for Mac Plus/SE) ..... 465.
- 5904 SuperANOVA 1.1 (for Mac II) ..... 465.
- 5906 SE+Graphics/SuperANOVA bundle ..... 595.
- 5907 StatView II/SuperANOVA bundle ..... 695.



### Ashton-Tate

*FullWrite 1.0*—A full-featured word processor at an incredible price. Buy now and be eligible for an upgrade to version 1.1 directly from Ashton-Tate for only the cost of shipping and handling. .... \$55.

### ★Acius ... 30 day MBG

- 5618 4th Dimension 2.0 ..... 469.
- 4024 4th Dimension Runtime 2.0 ..... 229.

### ★Advanced Software ... 30 day MBG

- 5608 DocuComp 1.11 ..... 89.

### A Lasting Impression

- 5465 ResumExpert ..... 39.
- 5749 Cover Letters ..... 39.
- 5853 Sales & Marketing ..... 39.
- 6363 Computer Science & Engineering ..... 39.
- 6374 Finance & Banking ..... 39.
- 6364 Students ..... 39.
- 5852 Management Edition ..... 39.

### Ashton-Tate

- 1324 FullWrite 1.0 (special, see box above) ..... 55.

### Blyth Software

- 5492 Omnis 5 ..... 347.
- 5855 Omnis 5 (Additional 1 user) ..... 59.

### ★BrainPower ... 60 day MBG

- 1535 DesignScope 1.15 ..... special 119.
- 3960 ArchiText 2.03 ..... special 159.
- 6362 Statalyzer 1.0 ..... 179.

### ★Bravo Technologies ... 30 day MBG

- 1539 MacCalc 1.2D ..... 79.

### ★Chang Labs ... 30 day MBG

- 1611 C.A.T. 2.0 ..... call

### ★CheckMark Software ... 60 day MBG

- 5861 CashLedger 1.3A ..... 115.
- 5862 Payroll 4.02 ..... 175.
- 5863 MultiLedger 1.3 ..... 235.

### Clarix

- 1129 MacWrite II 1.0 ..... 169.
- 4196 FileMaker II 1.1V2 ..... 219.
- 5910 FileMaker II & MacWrite II Bundle ..... 295.
- 1125 MacProject II 2.0 ..... 369.

### Computer Associates/Bedford

- 4977 Simply Accounting 1.04 ..... 225.

### ★DacEasy Software ... 60 day MBG

- 4502 DacEasy Light 1.0 ..... 42.

### ★Deneba Software ... 30 day MBG

- 4700 BigThesaurus 1.0 ..... 64.
- 1767 Comment 2.0 ..... 64.
- 1768 Coach Professional 3.1 ..... 125.

### ★Digital, Etc. ... 30 day MBG

- 6378 Business Sense 1.2 ..... 269.

### ★Dow Jones ... 30 day MBG

- 1786 Market Manager PLUS 2.0 ..... 189.
- 6383 Market Analyzer ..... 189.

### ★Electronic Arts ... 30 day MBG

- 1543 Thunder II 1.01 (Batteries Included) ..... \$49.

### ★Fox Software ... 30 day MBG

- 5572 FoxBASE II/Mac 2.0 ..... 295.
- 4580 FoxBASE +/Mac Runtime 2.0 ..... 179.
- 4844 FoxBASE +/Multi-User 2.0 ..... 399.
- 5579 FoxBASE +/Multi-User Runtime ..... 295.

### Individual Software

- 4720 101 Macros for Excel 1.5 ..... 35.

### Informix

- 4955 Wingz 1.1 ..... 249.

### ★Intuit ... 30 day MBG

- 2425 Quicken 1.5 ..... 36.

### ★Layered ... 30 day MBG

- 2613 Insight OneWrite 1.0 ..... 85.
- 5207 atOnce! 1.0 ..... 285.
- 2609 Insight Expert A/P 2.02 ..... 395.
- 2610 Insight Expert A/R 2.2 ..... 395.
- 2611 Insight Expert G/L 2.1 ..... 395.
- 2612 Insight Expert Inventory 1.01 ..... 395.
- 5643 Insight Expert Payroll 1.0 ..... 395.
- 2614 Insight Expert Time Billing 2.01 ..... 395.
- 2608 FrontDesk Multi-User (single node) ..... 59.
- 6372 FrontDesk Multi-User (1-3 nodes) ..... 134.
- 6373 FrontDesk Multi-User (1-10 nodes) ..... 299.

### ★Lundeen & Assoc. ... 60 day MBG

- 2684 WorksPlus Spell 2.0A ..... 56.

### ★MECA ... 60 day MBG

- 2796 Managing Your Money 3.0 ..... 124.

### ★Microlytics ... 60 day MBG

- 2733 WordFinder 2.0 ..... 34.
- 4870 Electronic WordFinder 220 special ..... 59.

### ★Microsoft ... 30 day MBG

- 2885 Write 1.0 ..... 79.
- 2866 File 2.0A ..... 125.
- 2884 Works 2.0 ..... 185.
- 4969 Word 4.0 ..... 249.
- 2865 Excel 2.2 ..... 249.
- 6500 MS Excel Money Manager Book (282 pages, includes disk) ..... 25.
- 5454 The Microsoft Office (includes Excel 2.2, Word 4.0, PowerPoint 2.01, and Mail 2.0) ..... 529.
- 6382 The Microsoft Office (CD-ROM) ..... 599.

### ★Monogram ... 30 day MBG

- 2780 Dollars & Sense 5.0 ..... 81.

### ★New Horizons ... 30 day MBG

- 6262 WordMaker 1.0.1 ..... 65.



### Layered ... 30 day MBG

*atOnce! 1.01*—1990 MacUser Editors' Choice Award for Best Accounting Package. "Superb integrated GL, AR, AP, and payroll system for small businesses. Automatic posting routines, password security, custom report writer" \$285.



# feature the Eddies.



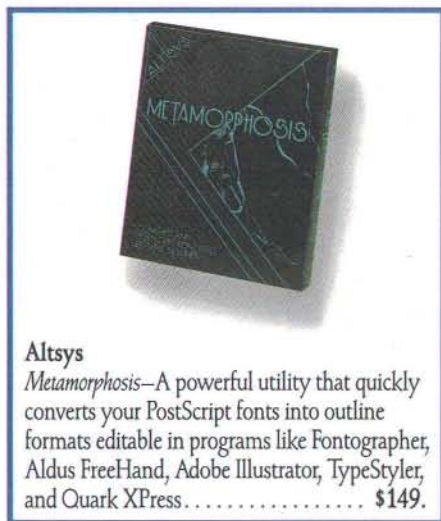
**DeltaPoint ... 60 day MBG**  
*DeltaGraph 1.0—1990 MacUser Editors' Choice Award for Best Presentation Product.* A charting package with the flexibility and power to create captivating charts and dramatic graphics, all in one program ..... \$99.

<b>★Niles &amp; Associates ... 30 day MBG</b>		
5048	EndLink 1.0	58.
4602	EndNote 1.2.1	75.
5101	Grant Manager 1.75	249.
<b>★Nolo Press ... 60 day MBG</b>		
4228	For the Record 1.03	28.
2981	WillMaker 3.0	32.
<b>★Odesta ... 30 day MBG</b>		
3014	GeoQuery 1.01	198.
5621	Double Helix III 3.0	339.
6468	DataDesk 3.0	349.
<b>Paracomp</b>		
4664	Milo 1.0	158.
<b>★Paragon Concepts ... 30 day MBG</b>		
5683	Nisus 2.03	249.
<b>★Preferred Publishers ... 30 day MBG</b>		
4781	Vantage 1.5	52.
4780	DAtabase 1.5	68.
<b>★ProVUE ... 60 day MBG</b>		
4582	Panorama 1.5	249.
<b>★Reference Software ... 30 day MBG</b>		
6268	Grammatik Mac 1.0	52.
<b>Satori</b>		
3320	BulkMailer 3.25	75.
3321	BulkMailer Plus 3.25	179.
3978	Components G/L	369.
6109	Components A/R	369.
<b>★Sensible Software ... 30 day MBG</b>		
3375	Sensible Grammar 1.5.5	53.
4692	Bookends 1.1.7	53.
<b>★Softstream Int'l., Inc. ... 60 day MBG</b>		
5439	Endeavour Planner 1.0	95.
<b>SoftView</b>		
3470	MacInTax 1989 1040	65.
6430	MacInTax & Quicken Bundle	95.
6496	MacInTax 1989 Professional 1040	359.
3473	Taxview Pro. Planner 1989	215.
6497	California State 1989	56.
6495	Massachusetts State 1989	56.
6498	New York State 1989	56.

Additional States available (CT, IL, NJ, OH, VA) ..... each \$56.		
<b>★Survivor Software ... 30 day MBG</b>		
6097	Invoiclt	49.
3289	MacMoney 3.5	59.
<b>★Symantec ... 30 day MBG</b>		
3422	More II 2.01	special 239.
<b>★Symmetry ... 30 day MBG</b>		
4504	Acta Advantage 1.0	64.
6069	KeyPlan	199.
<b>★Synergy ... 30 day MBG</b>		
3129	KaleidaGraph 2.0	145.
<b>TENpoint0</b>		
4638	Focal Point II	117.
<b>★Timeslips ... 30 day MBG</b> (formerly North Edge Software)		
2986	Timeslips III 1.1	169.
<b>★T/Maker ... 30 day MBG</b>		
3639	WriteNow 2.0	119.
<b>★WordPerfect ... 60 day MBG</b>		
3800	WordPerfect Mac 1.0.3	229.
<b>★Working Software ... 30 day MBG</b>		
3790	Lookup 2.0	35.
3788	Findswell 2.0	35.
3792	Spellswell 2.2	44.
4699	QuickLetter 1.02	72.

## GRAPHICS & DESIGN

<b>AAPPS</b>		
6509	MicroTV	265.
<b>Adobe Systems</b>		
5750	Adobe Type Manager	56.
6053	Adobe Plus Pack	109.
6156	Adobe ATM/Plus Pack	special 159.
1137	Adobe Illustrator '88 1.9 (w/ATM)	279.
1138	Collector's Edition I (Symbols, etc.)	79.
4816	Collector's Edition II (Patterns, etc.)	129.
5606	TrueForm Fill-Out 2.0	169.
5605	TrueForm 2.0	225.



**Altsys**  
*Metamorphosis—A powerful utility that quickly converts your PostScript fonts into outline formats editable in programs like Fontographer, Aldus FreeHand, Adobe Illustrator, TypeStyler, and Quark XPress. .... \$149.*

5001	StreamLine 1.0	\$229.
1142	Publishing Pack 1: Newsletters	229.
4565	Pub. Pack 2: Forms and Schedules	279.
4566	Publishing Pack 3: Presentations	279.
<i>MacConnection carries the entire Adobe Type Library volumes 1-122. call</i>		
4030	6 Optima	125.
4092	9 ITC Garamond	125.
4094	13 Helvetica Light/Black	125.
4093	14 Helvetica Condensed	239.
4041	20 Goudy Old Style	125.
4091	34 Aachen/Roman/Revue	125.



**Kennect Technology ... 30 day MBG**  
*Drive 2.4 & Rapport—Honorable mention—1990 MacUser Editors' Choice Award for Best Storage System. "Together they can cram 2.4 Megs' and 1.2 Megs' of data into high- and double-density drives respectively .... \$329.*

<b>★Aldus ... 30 day MBG</b>		
4751	Persuasion 2.0	329.
1330	Freehand 2.02	329.
1331	PageMaker 3.02	379.
6149	PageMaker Color Extension	135.
<b>Altsys</b>		
1194	FONtastic Plus 2.02	51.
5425	Art Importer 2.0	89.
6499	Metamorphosis	149.
1195	Fontographer 3.0	249.
<b>★Antic Software ... 30 day MBG</b>		
5756	FlexForm Bus. Templates I	special 45.
5760	FlexForm Bus. Templates II	special 45.
<b>Bitstream</b>		
<i>MacFontware Typeface Packages</i>		
5970	9 Futura Medium	89.
5976	11 Letter Gothic (12 Pitch)	89.
5974	15 ITC Garamond	89.
5975	16 ITC Souvenir	89.
5969	18 Bitstream Charter	89.
5973	19 ITC Galliard	89.
5971	20 Headlines 1	89.
5972	21 Headlines 2	89.
5968	23 Baskerville	89.
5977	27 News Gothic	89.
<b>Bright Star Technology</b>		
3962	HyperAnimator 1.5	98.
6093	Interface 1.0	249.

150C

**MMC**  
Macintosh Marketing Connection, Inc.

# MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/334-4444 603/446-7711 FAX 603/446-7791



# Products that are



**Aladdin Systems ... 30 day MBG**  
*Shortcut 1.0.1—Honorable mention—1990 MacUser Editors' Choice Award for Best General Utility.*  
*"An INT/cdev finder replacement written by Raymond Lau, winner of the Derek Van Alstyne Rising Star Award" ... \$46.*

## Broderbund Software

- 1427 Print Shop 1.3.1 ... 35.
- 6281 TypeStyler 1.0 ... 119.

## ★Casady & Greene ... 60 day MBG

*MacConnection carries the entire line of Casady & Greene fonts.*  
 Volumes 1-22 ... each 46.

- 4838 Quill Pack (Vol. 8 & 20) ... 89.
- 4836 Headline Pack (Vol. 10-12) ... 125.
- 4837 Modern Pack (Vol. 7, 14-18) ... 159.
- 4834 Distinctive Pack (Vol. 8, 19-22) ... 159.
- 4833 Classic Pack (Vol. 3-6, & 13) ... 159.
- 1575 Fluent Fonts 2.0 ... 27.

## Claris

- 1123 MacPaint II 2.0 ... 95.
- 4815 Smart Form Designer 1.01V ... 295.
- 1117 MacDraw II 1.1 ... 295.
- 5911 MacDraw II & MacWrite II Bundle ... 369.
- 4814 Claris CAD 1.0 ... 595.

## Computer Associates/Cricket

- 1668 Cricket Graph 1.3 ... 125.
- 1670 Cricket Presents 2.0 ... 285.

## ★Custom Applications ... 30 day MBG

- 6517 Freedom of Press 2.1A ... 259.

## ★DeltaPoint ... 60 day MBG

- 6095 DeltaGraph 1.0 ... 99.

## ★Deneba Software ... 30 day MBG

- 6365 UltraPaint 1.5 ... 125.
- 1769 Canvas 2.1 ... 189.

## ★DreamMaker ... 30 day MBG

- 4088 MacGallery (MacPaint format) ... 27.
- 4840 Cliptures: Business 1 ... 69.
- 4841 Cliptures: Business 2 ... 69.

## Dubl-Click Software

- World-Class LaserType Vol. 1-9 ... each 42.
- 3972 World-Class Fonts! Originals ... 42.
- 3973 World-Class Fonts! Stylish ... 42.
- 3974 World-Class Fonts! Giants ... 42.
- 5131 World-Class Fonts! Triples ... 42.
- 3964 WetPaint Classic Clip-Art (1 & 2) ... 42.
- 3965 WetPaint For Publishing (3 & 4) ... 42.
- 3966 WetPaint Animal Kingdom (5 & 6) ... 42.
- 3967 WetPaint Special Occasions (7 & 8) ... 42.
- 3968 WetPaint Printer's Helper (9 & 10) ... 42.
- 3969 WetPaint Industrial Revol. (11 & 12) ... 42.
- 3970 WetPaint Old Earth Almanac (13 & 14) ... 42.
- 3971 WetPaint Island Life (15 & 16) ... 42.
- 4940 WetPaint All the People (17 & 18) ... 42.

## ★Electronic Arts ... 30 day MBG

- 5289 Studio/1 1.0 ... \$96.
- 4315 Studio/8 1.0 ... 296.

## ★Emerald City ... 30 day MBG

- 6098 TypeAlign for ATM 1.0 ... 60.
- 5168 Smart Art I 1.0 ... 84.
- 5602 Smart Art II 1.0 ... 84.
- 5603 Smart Art III 1.0 ... 84.

## ★Enabling Technologies ... 30 day MBG

- 1871 Pro3D 1.2 ... 279.
- Clip 3D (8 clip-art pkgs.) ... each 57.

## ★Farallon Computing ... 30 day MBG

- 4684 ScreenRecorder 1.0 ... 125.
- 2199 MacRecorder 2.0 ... 159.

## ★Foundation Publishing ... 60 day MBG

- 2385 Comic People ... 21.
- 2384 Comic Strip Factory 1.6 ... 38.

## ★Generic Software ... 60 day MBG

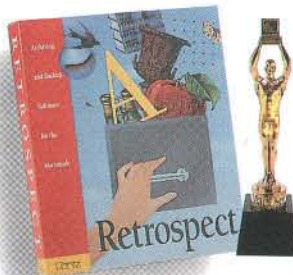
- 4319 Generic CADD Level 1 1.1 ... 84.

## ★Good Software ... 30 day MBG

- 5428 NuPaint 1.0.4 ... special 69.

## ★Graphsoft ... 30 day MBG

- 6502 Blueprint 1.0 ... 339.
- 4993 MiniCad+ 2.0V4 ... 519.



**Dantz Development ... 30 day MBG**  
*Retrospect 1.1—1990 MacUser Editors' Choice Award for Best Backup Software.* "Retrospect can quickly store data on almost every backup medium. It also makes backup chores as painless as possible" ... \$149.

## ★Great Wave ... 30 day MBG

- 2272 Crystal Paint 1.0 ... special 25.

## Innovative Data Design

- 2417 MacDraft 1.2B ... 173.
- 4707 Dreams 1.0 ... 322.

## Letraset

- 2621 Ready,Set,Go! 4.5 ... 275.
- 2619 Image Studio 1.5 ... 275.
- 4709 LetraStudio 1.5 ... 275.
- 6300 Font Studio ... 469.
- 6302 Design Studio ... 619.
- 6301 Color Studio ... 1589.

## ★Linguist's Software ... 60 day MBG

*Over 100 language fonts.* ... call

- 2630 Greek ... 59.
- 2636 Kanji 6.0 ... 59.
- 2625 Chinese Cantonese ... 79.
- 2645 Chinese Mandarin ... 79.
- 5759 LaserArabic & Farsi ... 59.
- 2641 LaserHebrew ... 79.
- 2640 LaserGreek ... 79.
- 2642 LaserKorean ... 89.

## ★MacroMind ... 30 day MBG

- 4953 VideoWorks II 2.0 ... 189.

- 4952 VideoWorks II HyperCard Driver 1.2 ... \$64.
- 4954 VideoWorks II Accel. 1.1 ... special 99.
- 6159 MacroMind Accelerator ... 125.
- 5087 MacroMind Director 1.01 ... 445.

## ★MicroMaps ... 30 day MBG

- 5516 MacAtlas (Paint version) ... 45.
- 5514 MacAtlas (EPSF version) ... 105.
- 5513 MacAtlas (Professional version) ... 105.
- 5515 MacAtlas Presentation Pack ... 105.

## ★Microsoft ... 30 day MBG

- 2878 PowerPoint 2.01 ... 249.

## Mindscape

- 5768 ZING 1.0 ... 125.

## Paracomp

- 4597 Swivel 3D 1.1 ... 299.
- 5028 ModelShop 1.0 ... 375.

## ★Preferred Publishers ... 30 day MBG

- 5751 Exposure 1.1 ... 52.

## Quark

- 4621 QuarkStyle 1.0 ... call
- 3230 Quark XPress 2.12 ... call

## ★Silicon Beach ... 60 day MBG

- 3504 Silicon Press 1.1 ... 52.
- 3506 SuperPaint 2.0 ... 125.
- 3980 Digital Darkroom 1.1 ... 249.
- 3507 Super3D 2.0 ... 315.

## ★Softstream Int'l., Inc. ... 60 day MBG

- 4996 UltraSpec 1.0 ... 95.

## ★Solutions Int'l. ... 60 day MBG

- 3446 The Curator 1.05 ... 72.

## ★Springboard ... 30 day MBG

- 3530 Certificate Maker 2.0 ... 22.
- 3532 Certificate Library ... 18.
- 4497 Top Honors 1.01 ... 59.
- 4500 Springboard Publisher II ... 109.

## ★Strategic Mapping ... 30 day MBG

- 6511 Estatix ... 219.
- 6518 MapMaker 4.0 ... 289.

## ★SuperMac Software ... 60 day MBG

- 3380 PixelPaint 2.0 ... 225.
- 5625 PixelPaint Professional 1.0 ... 389.

## ★Timeworks ... 30 day MBG

- 5908 Publish-it! 1.1.1 ... 225.

## ★T/Maker ... 30 day MBG

- 3632 ClickArt Business Images ... 32.
- 3633 ClickArt Christian Images ... 39.
- 3635 EPS Illustrations ... 82.
- 5167 EPS Business Art ... 82.



**Microsoft ... 30 day MBG**  
*Excel 2.2—Honorable mention—1990 MacUser Editors' Choice Award for Best Spreadsheet.*  
*"Enhanced interface, which adds interapplication communication with Mail 2.0"—Honorable mention (Best Communication Product) ... \$249.*




# tried, true, and steady.

## 3G Graphics

- 3942 Images with Impact: Graphics 1 ... \$51.  
 4583 Images with Impact: Business 1 ... 65.  
 ★Wayzata Tech. ... 60 day MBG  
 6370 Quick Art (CD-ROM) ... 175.  
 ★Wildflower ... 30 day MBG  
 6512 SnapJot 2.0 ... 32.  
 ★Zedcor ... 60 day MBG  
 3986 DeskPaint & DeskDraw 2.01 ... 64.

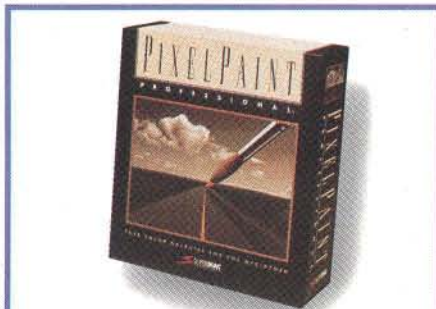
## PROGRAMMING & HYPERMEDIA

- ★Antic Software ... 30 day MBG  
 6100 HOT-SPOT ... 42.  
**Apple Computer**  
 1118 HyperCard 1.2.2 ... 42.  
**Bantam Publishing**  
 1403 Complete HyperCard Handbook ... 22.  
 ★Beacon Technology ... 30 day MBG  
 6426 Gems of The Word 1.0 ... 25.  
 4967 HyperBible (King James) 1.0 ... 145.  
 4968 HyperBible (New International) 1.0 ... 175.  
**Borland International**  
 1511 Turbo Pascal 1.1 ... 68.  
 1512 Turbo Pascal Tutor 1.0 ... 46.  
**Broderbund Software**  
 5237 Whole Earth Catalog (CD-ROM) ... 89.  
 ★Digitalk ... 60 day MBG  
 5166 SmallTalk/V Mac 1.1 ... 125.



**SoftView**  
*MacInTax 1989 1040-1990 MacUser Editors' Choice Award for Best Personal Finance Package. "The most popular tax package for the Macintosh. SoftView offers an electronic filing service for fax and disk submissions" ... \$65.*

- ★DreamMaker ... 30 day MBG  
 4115 MacGallery (HyperCard format) ... 27.  
 ★Emerald City ... 30 day MBG  
 5728 LaserTalk 1.0 ... 149.  
**Hyperpress Publishing**  
 4233 Icon Factory 1.0 ... 29.  
 5089 Script Library 1.0 ... 29.  
 6501 StepAhead 1.0 ... 57.  
**ICOM Simulations**  
 5681 HyperTMON 1.0 ... 59.  
 4085 TMON 2.8.2 ... 87.



**SuperMac Software ... 60 day MBG**  
*PixelPaint Pro. 1.0—Honorable mention—1990 MacUser Editors' Choice Award for Best Graphics Program. "Limitless colors, sophisticated effects, & an interface for creating, editing, & color-separating full-color images" ... \$389.*

## Individual Software

- 4719 101 Scripts & Buttons HyperCard 1.0 ... 36.  
 ★Manx Software ... 60 day MBG  
 4075 Aztec C + SDB 3.6B ... 95.  
 ★MicroMaps ... 30 day MBG  
 5512 HyperAtlas ... 59.  
 5518 QuickMap ... 59.  
 ★Microsoft ... 30 day MBG  
 4471 QuickBasic 1.0 ... 65.  
 ★Millenium Software ... 30 day MBG  
 6105 HyperX 3.0 ... 65.  
 ★Now Software ... 30 day MBG  
 (formerly SmethersBarnes)  
 1478 Prototyper 3.0 ... 185.  
**Olduvai**  
 5446 PLUS 1.11 ... 109.  
 ★Silicon Beach ... 60 day MBG  
 5100 SuperCard 1.0 ... 125.  
 ★Softstream Int'l., Inc. ... 60 day MBG  
 6513 Authenticate & Mutate ... 79.  
 5440 HyperHIT 1.0 ... 125.  
 ★Somak Software ... 30 day MBG  
 5897 ScriptEdit 1.1 ... 49.  
 ★Springboard ... 30 day MBG  
 4495 Family Matters 1.0 ... 28.  
 ★Symantec ... 30 day MBG  
 4644 Just Enough Pascal 1.0 ... 52.  
 3421 THINK Pascal 2.03 ... 103.  
 3420 THINK C 4.0 ... 168.  
 ★Symmetry ... 30 day MBG  
 3318 HyperDA 1.2 ... 45.  
 ★Timeworks ... 30 day MBG  
 5905 The Hyperworks Organizer 1.0 ... 57.  
 ★TML Systems ... 30 day MBG  
 3548 TML Source Code Library II 1.1 ... 39.  
 3549 TML Pascal II 3.0 (w/MPW 3.0) ... 109.  
**Trendware**  
 5203 Stack Cleaner ... 29.  
 5202 HyperTools #1 1.02 ... 52.  
 5199 HyperTools #2 1.04 ... 52.

- 5609 XCAL 1.0 ... \$77.  
**True BASIC, Inc.**  
 3587 True BASIC 2.02 ... 55.  
 3583 Scientific Graphics ... 39.  
 3588 3D Graphics ... 39.  
 Additional Toolkits available ... call  
 ★Zedcor ... 60 day MBG  
 3985 ZBASIC 5.0 ... 89.

## UTILITIES

- ★Abbott Systems ... 30 day MBG  
 5236 CanOpener 1.1 ... 64.  
 ★Affinity Microsystems ... 60 day MBG  
 1014 Affinifile 1.1 ... 45.  
 1016 Tempo II 1.02 ... 75.  
 ★Aladdin Systems ... 30 day MBG  
 6169 Shortcut 1.0.1 ... 46.  
 ★American Power ... 30 day MBG  
 6102 PowerChute ... 65.  
 ★Berkeley Systems ... 30 day MBG  
 5737 After Dark 1.1 ... 22.  
 1541 Stepping Out II 2.01 ... 49.  
**Borland**  
 1510 Sidekick 2.0 ... 68.  
 ★Bravo ... 30 day MBG  
 5404 SPAMM 1.1 ... 48.  
 ★Casady & Greene ... 60 day MBG  
 2269 QuickDEX 1.4A ... 31.  
 ★CE Software ... 60 day MBG  
 4689 MockPackage Plus Utilities 4.4 ... 32.  
 1727 CalendarMaker 3.0 ... 32.  
 6278 DiskTop 4.0 ... 64.  
 1729 QuickKeys 1.2 ... 64.  
 ★Central Point ... 30 day MBG  
 5040 Copy II Mac 7.2 ... 23.  
 5041 PC Tools Deluxe Mac 1.1 ... 45.  
 ★Connectix ... 30 day MBG  
 6123 Virtual 2.0 (for SE/30, IICX, & IIC) ... 115.  
 6122 Virtual 2.0 (for Mac II, incl. PMMU) ... 188.



**Farallon Computing ... 30 day MBG**  
*Timbuktu Remote 1.0.1—Honorable mention—1990 MacUser Editors' Choice Award for Best Connectivity/Networking Hardware. "Allows you to control another Mac and pass files to and from it through a modem connection". \$125.*

150C

MMC  
 of the Macintosh Association, Inc.

# MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/334-4444 603/446-7711 FAX 603/446-7791



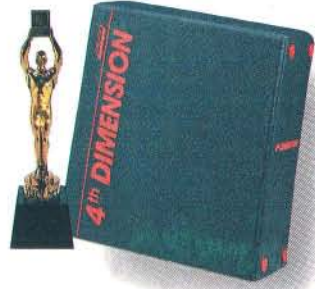
# The experts have spoken



**Broderbund Software**  
*SimCity 1.1*—1990 MacUser Editors' Choice Award for *Best Recreation Program*. "Interactive simulation that uses real-world data to create the consequences of your actions: pollution, traffic jams, urban blight, & disasters" .. \$29.

<b>★Dantz Development ... 30 day MBG</b>		
5255	Retrospect 1.1	149.
<b>Dubi-Click Software</b>		
1824	Calculator Construction Set 2.01	45.
<b>★Electronic Arts ... 30 day MBG</b>		
1843	Disk Tools Plus 1.01 (Batteries Incl.)	31.
<b>★Fifth Generation ... 60 day MBG</b>		
4287	PYRO! 3.3 (screen saver)	14.
3954	PowerStation 2.5	34.
3955	Suitcase II 1.2.3	44.
5178	FastBack II 2.0	107.
5725	DiskLock 1.0	107.
<b>★HJC Software ... 30 day MBG</b>		
4803	Virex (latest version)	52.
5885	Virex (10 Pack)	329.
<b>ICOM Simulations</b>		
4084	On Cue 1.3	35.
<b>★Insight Development ... 30 day MBG</b>		
6173	MacEnvelope 4.1	79.
6171	MacPrint 1.2	95.
<b>★JAM Software ... 30 day MBG</b>		
6089	Smart Alarms Single User	49.
6088	Smart Alarms 1-4 Users	99.
6087	Smart Alarms 5-8 Users	149.
6086	Smart Alarms 9-15 Users	199.
6085	Smart Alarms 16-25 Users	299.
<b>★Kent Marsh Ltd. ... 30 day MBG</b>		
5457	QuickLock 1.0	56.
2591	The NightWatch 1.03	86.
6134	MacSafe II	107.
<b>★Kiwi Software ... 60 day MBG</b>		
6267	Kiwi Envelopes! 3.0	35.
<b>★Loop Software ... 30 day MBG</b>		
5442	PictureBook 3.2	39.
<b>★Microlytics ... 60 day MBG</b>		
2732	GOfar 2.0	45.
<b>★Microseeds Pub. ... 60 day MBG</b>		
4848	INITPicker 1.0	25.
4210	Screen Gems 1.0	39.
2913	Redux 1.6	49.
<b>Olduvai</b>		
4503	MultiClip 1.01	50.
<b>★ON Technology ... 1 year MBG</b>		
6385	On Location 1.0	75.
<b>★Software Innovations ... 30 day MBG</b>		
5869	HandOff 1.1	32.
<b>★Solutions Int'l. ... 60 day MBG</b>		
3448	SmartScrap & The Clipper 2.1	45.

3449	SuperGlue II 2.0	\$61.
<b>★SuperMac Software ... 60 day MBG</b>		
3383	SuperSpool 5.0	58.
3382	SuperLaserSpool 2.0	87.
3378	SuperLaserSpool 5-Pack 2.0	289.
3377	DiskFit 1.5	58.
3379	Network DiskFit 1.5	225.
3381	Sentinel 2.0	87.
<b>★Symantec ... 30 day MBG</b>		
5176	Symantec Anti-virus for Mac 1.1	68.
5724	Symantec Utilities II for Mac	99.
<b>★Williams &amp; Macias ... 30 day MBG</b>		
3779	DiskFinder	25.
3783	myDiskLabeler w/Color 2.9.11	28.
3784	myDiskLabeler w/LaserWriter 2.9.11	33.
3780	ImageWriter II Label Pack (Qty. 216)	15.
3781	LaserWriter Label Pack (Qty. 216)	18.
4976	Sticky Business 1.0.7	89.
<b>★XTree ... 30 day MBG</b>		
5177	XTreeMac 1.02	52.

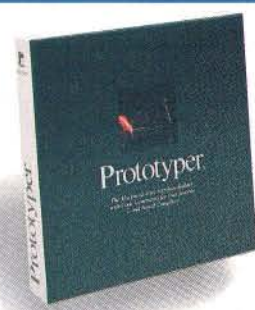


**Acius ... 30 day MBG**  
*4th Dimension 2.0*—1990 MacUser Editors' Choice Award for *Best Database*. "Increased power, speed and performance, makes 4th Dimension the most powerful database on the Mac" .. \$469.

## LEARN & PLAY

<b>Access Software</b>		
4655	World Class Leader Board Golf	26.
<b>Accolade</b>		
1184	Hardball (CP)	27.
4484	Mean 18 (CP)	27.
4485	4th and Inches (CP)	27.
<b>Activision</b>		
4475	Quarterstaff (CP)	29.
4486	Manhole	29.
5127	Manhole (CD-ROM)	35.
5517	Cosmic Osmo	41.
<b>★Ars Nova ... 30 day MBG</b>		
1215	Practica Musica 2.2	69.
<b>★Bogas Productions ... 60 day MBG</b>		
1461	Studio Session 1.2 SE	45.
4255	Super Studio Session 2.0	65.
6135	Super Studio Bundle (w/5 below)	99.
1459	Heavy Metal Rock	13.
1460	String Quartet	13.
1458	Country Disk	13.
4832	Sound Effects	13.
5719	Brass Disk	13.
<b>Bright Star Technology</b>		
3961	Talking Tiles 1.0	27.
1402	Alphabet Blocks 1.0	30.

<b>Broderbund Software</b>		
4314	Type! 1.0	\$18.
5886	Star Wars (CP)	24.
4099	Shufflepuck Cafe (CP)	24.
1421	Ancient Art of War (CP)	27.
4540	Ancient Art of War at Sea (CP)	27.
6516	The Playroom (CP)	27.
4229	Where/World Carmen Sandiego? (CP)	27.
5755	Where/Europe Carmen Sandiego? (CP)	29.
5233	Where/USA Carmen Sandiego? (CP)	29.
6384	PlayMaker Football (CP)	29.
1423	Jam Session 1.1 (CP)	29.
4966	SimCity 1.1 (CP)	29.
5871	SimCity Supreme (CP)	48.
6515	SimCity Terrain Editor (CP)	16.
1422	Geometry 1.2 (CP)	58.
4067	Calculus 1.2 (CP)	58.
1426	Physics 1.2 (CP)	58.
<b>★Bull City Software ... 30 day MBG</b>		
5841	Moriarty's Revenge (CP)	32.
<b>Bullseye</b>		
1545	Fokker Triplane 2.02 (CP)	24.
1544	Ferrari Grand Prix (CP)	32.
4074	P51 Mustang Flight Simulator (CP)	32.
<b>Carina Software</b>		
5726	Voyager 1.2	89.
<b>★Casady &amp; Greene ... 60 day MBG</b>		
2268	Crystal Quest 2.2T	25.
4119	Crystal Quest w/Critter Editor 2.2T	40.
<b>Coda Music Systems</b>		
4367	MacDrums 1.01 (CP)	31.
4483	Perceive 1.0	49.
5854	MusicProse 1.0	169.
5604	Finale 2.0	569.
<b>Davidson &amp; Associates</b>		
1734	Math Blaster! 1.0 (CP)	26.
6128	Math Blaster Mystery (CP)	26.
4978	Speed Reader II 1.0 (CP)	26.
<b>★Electronic Arts ... 30 day MBG</b>		
1848	Patton vs Rommel	15.
1850	Reach for the Stars	26.
6297	Halls of Montezuma	26.
5554	Bard's Tale	32.
4064	Chuck Yeager Flight Simulator	32.
4588	Life & Death (CP)	32.
4945	The Hunt for Red October	32.
4981	Starfleet 1	36.
1846	Deluxe Music Construction Set 2.5	84.



**SmethersBarnes ... 30 day MBG**  
*Prototyper 2.1*—Honorable mention—1990 MacUser Editors' Choice Award for *Best Programming Tool*. "Clearly shows direction CASE interface tools should be taking" 3.0 now supports custom controls & more flexible code generation \$185.



# and they aren't jokin'.



**Abacus Concepts ... 30 day MBG**  
*SuperANOVA 1.1*—1990 MacUser Editors' Choice Award for Best Data Acquisition/Analysis Product. Analyzes virtually any general linear model used to perform ANOVA, ANCOVA, MANOVA, MANCOVA, & regression on data ..... \$465.

- ★**First Byte ... 30 day MBG**
- 5294 Puzzle Storybook 1.0 (ages 3-8) ... 27.
  - 5293 Dinosaur Discovery Kit 1.0 (ages 3-8) ... 27.
  - 3941 SmoothTalker 2.1 ... 32.
  - 3936 KidTalk 2.0 (ages 5-15) ... 32.
  - 3935 Speller Bee 2.0 (ages 5-12) ... 32.

- ★**Great Wave ... 30 day MBG**
- 2277 TimeMasters 1.0 (ages 4 +) ... 22.
  - 2276 KidsTime 1.2 (ages 3-8) ... 26.
  - 5642 KidsMath 1.1 (ages 3-8) ... 26.
  - 4334 NumberMaze 1.1 (ages 5-12) ... 26.
  - 2270 American Discovery 2.3 (ages 9 +) ... 26.
  - 2273 ConcertWare+ 4.0 ... 38.
  - 2271 ConcertWare+ MIDI 5.0 ... 99.

- Infocom**
- 5814 Journey ... 29.
  - 5816 Shogun ... 35.

- Inline Design**
- 5870 Bomber (includes headphones) ... 26.

- ★**Learning Company ... 30 day MBG**
- 2670 Reader Rabbit 2.1 (CP) (ages 4-7) ... 31.
  - 5453 Talking Math Rabbit 1.0 (ages 4-7) ... 31.

- MicroProse**
- 4697 Pirates! (CP) ... 35.

- ★**Microsoft ... 30 day MBG**
- 2868 Flight Simulator (CP) ... 33.

- Miles Computing**
- 5253 The Puzzle Gallery ... 26.
  - 2765 Fool's Errand ... 32.
  - 2767 Harrier Strike Mission II (CP) ... 32.

- Mindscape**
- 4083 Balance of Power 1990 (CP) ... 29.
  - 3987 Colony (CP) ... 29.
  - 4596 Deja Vu II (CP) ... 29.
  - 2743 Crossword Magic (CP) ... 29.
  - 2749 Shadowgate (CP) ... 29.
  - 5252 Gauntlet (CP) ... 29.
  - 2751 Uninvited (CP) ... 29.

- ★**Paragon Concepts ... 30 day MBG**
- 6094 MacTag 2.04 ... 42.

★**Penton Overseas ... 30 day MBG**

- 5864 VocabuLearn/ce French (level 1) ... \$29.
- 5887 VocabuLearn/ce French (level 2) ... 29.
- 5865 VocabuLearn/ce Italian (level 1) ... 29.
- 5889 VocabuLearn/ce Italian (level 2) ... 29.
- 5867 VocabuLearn/ce Spanish (level 1) ... 29.
- 5891 VocabuLearn/ce Spanish (level 2) ... 29.
- 5868 VocabuLearn/ce German (level 1) ... 29.
- 5888 VocabuLearn/ce German (level 2) ... 29.
- 5866 VocabuLearn/ce Japanese (level 1) ... 35.
- 5890 VocabuLearn/ce Japanese (level 2) ... 35.

★**Personal Training Sys. ... 60 day MBG**

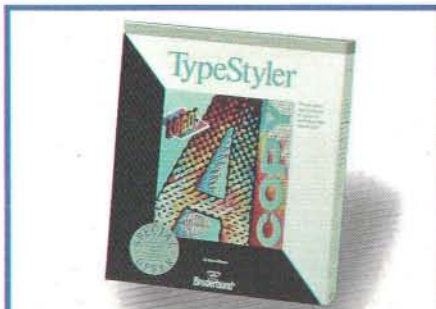
- Personal Training for Excel*
- 5573 XL1 Beginning Spreadsheets ... 36.
  - 5574 XL2 Intermediate Spreadsheets ... 36.
  - 5575 XL3 Advanced Spreadsheets ... 36.
  - 5576 XL4 Creating Business Graphics ... 36.
  - 6021 XL5 Building Databases ... 36.
  - 6020 XL6 Beginning Macros ... 36.
  - 6367 XL7 Advanced Macros ... 36.

- Personal Training for Macintosh*
- 5263 B1 The Basics (for 2 floppy drives) ... 36.
  - 5264 B2 The Basics (for Plus or SE w/HD) ... 36.
  - 5265 B3 The Basics (for Mac II w/HD) ... 36.
  - 5266 B4 Beyond the Basics ... 36.

- Personal Training for Word*
- 4947 W1 Beginning Level ... 36.
  - 4854 W2 Intermediate Level ... 36.
  - 5098 W3 Advanced Level ... 36.
  - 5418 W4 Additional Features ... 36.

- Personal Training for Persuasion*
- 5269 LP1 Beginning Persuasion ... 36.
  - 5270 LP2 Intermediate Persuasion ... 36.
  - 5271 LP3 Creating AutoTemplates ... 36.
  - 5272 LP4 Creating Artwork ... 36.

- Personal Training for HyperCard*
- 5194 H1 Using HyperCard ... 36.
  - 5195 H2 Creating Cards & Stacks ... 36.
  - 5267 H3 Basic Scripting ... 36.
  - 5268 H4 Advanced Scripting ... 36.



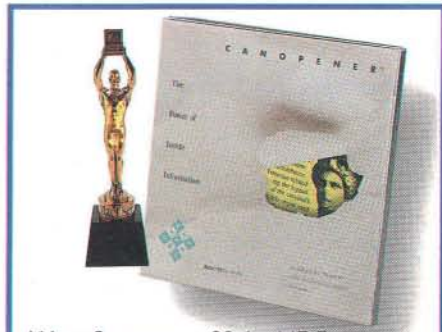
**Broderbund Software**  
*TypeStyler 1.0*—Honorable mention—1990 MacUser Editors' Choice Award for Best Typographic Product. "Let's you create sophisticated special effects with thousands of third-party PostScript fonts" ..... \$119.

*Personal Training for PageMaker*

- 4852 P1 Beginning PageMaker ... \$36.
- 4853 P2 Intermediate PageMaker ... 36.
- 5096 P3 Tips & Techniques ... 36.
- 5097 P4 Advanced Features ... 36.

*Personal Training for Works*

- 5196 M1 Database & Form Letters ... 36.
- 5197 M2 Advanced Databases ... 36.
- 5273 M3 Spreadsheets ... 36.
- 5274 M4 Word Processing ... 36.



**Abbott Systems ... 30 day MBG**  
*CanOpener 1.1*—1990 MacUser Editors' Choice Award for Best File-Management Utility. "Opens any type of Paint, PICT, EPSF, or text file without conversion. Also searches for text strings—even within a graphic" ..... \$64.

*Personal Training for Illustrator 88*

- 5259 A1 Beginning Illustrator ... 36.
- 5260 A2 Intermediate Illustrator ... 36.
- 5261 A3 Creating Special Effects ... 36.
- 5262 A4 Precision Drawing Techniques ... 36.

*Personal Training for FileMaker*

- 5278 FM1 Beginning FileMaker ... 36.
- 5279 FM2 Intermediate FileMaker ... 36.
- 5280 FM3 Advanced FileMaker ... 36.
- 5281 FM4 Tips & Techniques ... 36.

*Personal Training for FreeHand*

- 6353 FH1 Beginning Level ... 36.

**Postcraft**

- 6466 Citadel ... 30.

**Premier Technology**

- 5773 Strategic Conquest Plus 2.0 ... 34.
- 5774 NetTrek-The Real Version ... 34.

**Sierra On-Line**

- 3397 Leisure Suit Larry (CP) ... 23.
- 5694 Manhunter: San Francisco (CP) ... 29.
- 3394 King's Quest (CP) ... 29.
- 3395 King's Quest II (CP) ... 29.
- 3396 King's Quest III (CP) ... 29.
- 3398 Police Quest (CP) ... 29.
- 3399 Space Quest (CP) ... 29.
- 3400 Space Quest II (CP) ... 29.

★**Silicon Beach ... 60 day MBG**

- 3502 Beyond Dark Castle ... 24.
- 3501 Apache Strike ... 24.
- 3503 Dark Castle ... 24.

150C

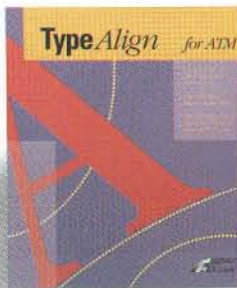
**MMC**  
Macintosh Marketing Connection, Inc.

# MacConnection™

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/334-4444 603/446-7711 FAX 603/446-7791



# So place your order



**Emerald City ... 30 day MBG**  
*TypeAlign for ATM 1.0—1990 MacUser Editors' Choice Award for Best Typographic Product. "If you have ATM and want to do typographic special effects, TypeAlign is a must".... \$60.*

## ★Softstream Int'l., Inc. ... 60 day MBG

4071	MacMan...	23.
4072	The Solitaire DA...	23.
4995	Cribbage Tutor...	26.
6259	22nd Street Whist Tutor...	32.
6258	MacRummy Tutor...	32.
4073	Colour Billiards...	38.

## ★Software Toolworks ... 30 day MBG

1842	Chessmaster 2000 (CP)...	28.
4619	Mavis Beacon Typing 1.2B (CP)...	32.
6111	Cribbage King-Gin King...	39.

## ★Spectrum Holobyte ... 30 day MBG

4175	Solitaire Royale (for Mac SE)...	19.
4001	Solitaire Royale (for Mac II)...	19.
3464	Tetris...	19.
4472	Tetris (color version)...	22.
3462	PT-109...	26.
3460	GATO...	26.
3459	Falcon 2.0...	30.

## ★Spinnaker ... 30 day MBG

2328	Sargon IV (CP)...	29.
2329	SAT Score Improvement 1.0 (CP)...	57.

## ★Springboard ... 30 day MBG

4493	Atlas Explorer (CP)...	28.
4988	Hidden Agenda...	36.

## ★SubLogic ... 60 day MBG

4698	Jet (CP)...	32.
Europe, Japan, and Hawaii scenery disks also available... each		19.

## ★Think Educational ... 60 day MBG

3615	MacEdge II 1.0 (CP) (ages 6-12)...	27.
------	------------------------------------	-----

## True BASIC, Inc.

3571	Algebra (with workbook)...	45.
3580	Pre-Calculus (with workbook)...	45.
3575	Calculus (with workbook)...	45.
6110	Algebraic Proposer 2.0...	45.

## ★Unicorn ... 30 day MBG

3751	Animal Kingdom (CP) (ages 6-12)...	27.
3756	Math Wizard (CP) (ages 5-10)...	27.
3755	MacRobots (CP) (ages up to 6)...	27.
3754	Read-A-Rama (CP) (ages 5-8)...	32.

## ★Wayzata Tech. ... 60 day MBG

6369	The World Factbook 1989 (CD-ROM)...	69.
------	-------------------------------------	-----

## ★XOR ... 30 day MBG

6152	TaskMaker (CP)...	27.
4517	Road Racer (CP)...	38.
6041	MacGolf (CP)...	34.
4320	MacGolf Classic (CP)...	53.

## NETWORKS & COMMUNICATIONS

### ★Abaton ... 30 day MBG

4589	InterFAX 12/48 Modem...	\$265.
6266	InterFAX 24/96 Modem...	419.

### ★CE Software ... 60 day MBG

5174	QuickMail 2.0 (5 user Pak)...	169.
5173	QuickMail 2.0 (10 user Pak)...	249.

### ★CompuServe ... 60 day MBG

1676	CompuServe Information Service...	24.
1673	CompuServe Navigator 2.1...	39.
1674	Standard Service/Navigator Bundle...	59.

### Connect, Inc.

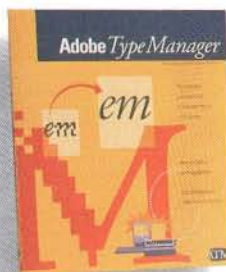
5834	Connect 1.5 for the Macintosh...	63.
------	----------------------------------	-----

### ★DataViz ... 60 day MBG

1823	MacLink Plus/PC 4.1...	125.
4842	MacLink Plus/Translators 4.1...	99.

### ★Dove Computer ... 60 day MBG

4939	FastNet III...	375.
4938	FastNet SE...	375.
5624	FastNet SE/30...	375.
4937	FastNet SCSI...	749.



## Adobe Systems

*Adobe Type Manager—1990 MacUser Editors' Choice Award for Most Significant Software Product and Honorable mention for Best Typographic Product. "Provides WYSIWYG display of Adobe PostScript fonts".... \$56.*

### ★Dow Jones ... 30 day MBG

5295	News/Retrieval Membership Package...	24.
1785	Desktop Express 1.03...	95.

### ★Farallon Computing ... 30 day MBG

5707	Timbuktu 3.0...	95.
4866	Timbuktu Remote 1.0.1...	125.
6371	Timbuktu/Remote Access Pack...	859.
4867	Timbuktu 30-Pack 3.0...	1295.
2201	TrafficWatch 1.08...	125.
2202	PhoneNET to LocalTalk Adapter...	8.
5664	PhoneNET StarConnector...	20.
6273	PhoneNET StarConnector 10-Pack...	139.
4869	PhoneNET Connector 10-Pack...	198.
2204	PhoneNET PLUS (DB-9)...	32.
2203	PhoneNET PLUS (DIN-8)...	32.
5251	PhoneNET CheckNET...	64.
4868	PhoneNET Repeater...	315.
2206	PhoneNET StarController...	825.
2205	Star Wiring Kit (Punchdown)...	64.
5455	Star Wiring Kit (Harmonica)...	64.
5893	Portable Pack (incl. two copies each of Timbuktu & Timbuktu Remote, two StarConnectors, and accessories)...	375.

### ★Freesoft ... 60 day MBG

6115	White Knight 11...	85.
------	--------------------	-----

## Hayes

2300	Smartcom II 3.1A...	\$85.
2307	Smartmodem 2400...	349.
5991	V9600 Baud Modem...	759.

## Insignia Solutions

4089	SoftPC 1.3...	245.
------	---------------	------

## Intel Corporation

5119	2400EX Modem...	179.
6265	2400EX with MicroPhone 1.5...	245.

### ★Microsoft ... 30 day MBG

5858	Microsoft Mail 2.0 Workstation...	84.
5856	Microsoft Mail 2.0 Server...	249.
5857	Microsoft Mail 2.0 (20 Pack)...	969.

### ★Nuvotech ... 60 day MBG

3000	TurboNet ST (DIN-8)...	30.
5277	TurboBridge...	319.
6272	NuvoLink SC...	319.
6261	TurboStar...	1359.

### ★Practical Peripherals ... 30 day MBG

3102	2400 Baud External Modem...	179.
5285	PM 2400SA MNP Modem...	209.
3089	Mac Communications Pack 1.5...	225.

### ★Shiva ... 30 day MBG

3444	NetSerial X232...	279.
4347	NetBridge...	339.
4942	TeleBridge...	339.
3443	NetModem V2400...	439.
6519	EtherGate...	1629.

### ★Software Ventures ... 30 day MBG

3455	MicroPhone II 3.0...	215.
------	----------------------	------

### ★Solutions Int'l. ... 60 day MBG

4308	BackFAX (reqs. Apple FAX modem)...	124.
------	------------------------------------	------

### ★Synergy ... 30 day MBG

3130	VersaTerm 4.1.1...	88.
3131	VersaTerm-PRO 3.1.1...	174.

### ★TOPS ... 30 day MBG

4598	TOPS FlashBox...	119.
3725	TOPS Repeater...	119.
3720	TOPS Flashcard...	155.
6264	Network Bundle for Mac 3.0...	189.
6377	InBox/Mac Administrator (20 user)...	215.

### ★Traveling Software ... 60 day MBG

3729	LapLink Mac III Connectivity Pac...	114.
------	-------------------------------------	------

## INPUT/OUTPUT

### ★American Power ... 30 day MBG

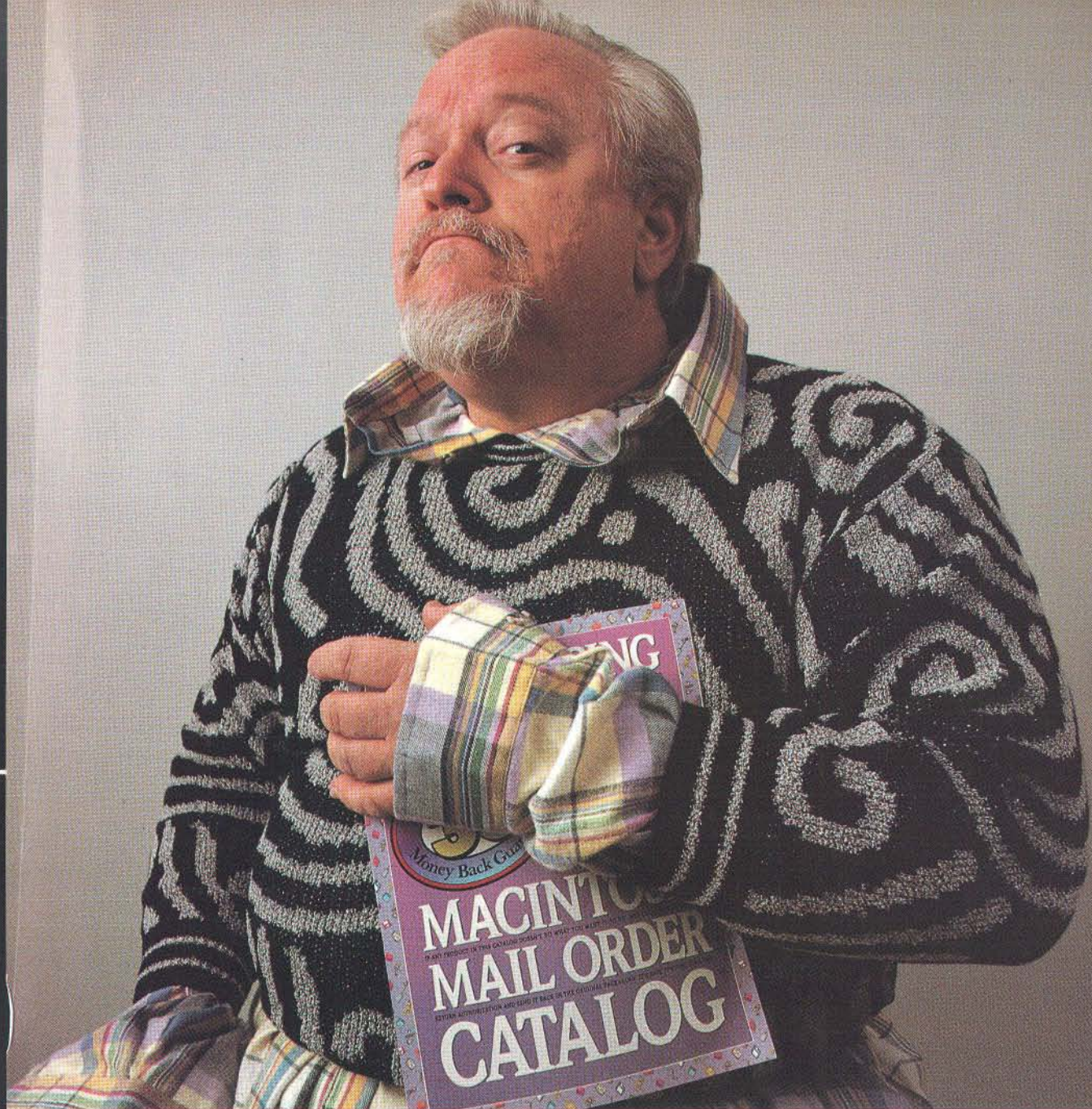
5895	110SE UPS...	209.
------	--------------	------



## Microsoft ... 30 day MBG

*Word 4.0—1990 MacUser Editors' Choice Award for Best Word Processor. "Added some innovative features, such as an integrated table space maker, completely customizable menus, and dynamic data links".... \$249.*





**"I was very skeptical of mail order."**

Dear MacConnection,

After some unfortunate experiences purchasing clothes through mail order, I was very skeptical of mail order shopping for my Mac. Until a friend insisted that I give MacConnection a try. Your salespeople have been very knowledgeable and helpful in selecting the proper

program for the job, your overnight delivery is incredibly fast (even during Christmas rush), and your prices are as competitive as anyone's.

Now I doubt if I'll ever buy my computer-related material any other way!

Joe Van Riper  
Charlotte, NC

# MacConnection<sup>TM</sup> 1-800/334-4444

MacConnection, 14 Mill Street, Marlow, NH 03456 1-800/334-4444 603/446-7711 FAX 603/446-7791

© Copyright 1990 PC Connection, Inc. MacConnection is a division and trademark of PC Connection, Inc., Marlow, NH.

Just for the record, all the ads in this series feature photographs of real live MacConnection customers and the real live letters they wrote us. Really!



# Call 800/334-4444.

4865	Address Labels 3 1/2" x 1 5/16" (Qty. 3750)	\$15.
4811	Transparencies 8 1/2" x 11" (Qty. 50)	22.
4813	Round Labels 3 1/3" (Qty. 150)	7.
4812	Laser Labels 1 1/2" x 1 3/4" (Qty. 2000)	7.
4807	Laser Labels 1" x 2 5/8" (Qty. 3000)	24.
4808	Laser Labels 1 1/2" x 4" (Qty. 1400)	24.
4809	Laser Labels 2" x 4" (Qty. 1000)	24.
4810	Laser Labels 8 1/2" x 11" (Qty. 100)	24.

## ★Basic Needs ... 60 day MBG

5635	Keyboard Flip	6.
5633	LaserWriter Printer Stand	28.
5634	Large Screen Monitor Stand	38.

## ★Computer Coverup ... 60 day MBG

1722	ImageWriter LQ Cover	8.
1723	ImageWriter II Cover	8.
4657	LaserWriter II Cover	10.
1720	Mac Plus Cover	10.
1724	Mac SE Cover	10.
1725	Mac SE Ext. Keyboard Cover Set	10.

## ★CoStar ... 30 day MBG

6091	The Organizer	199.
------	---------------	------

## ★Goldstein & Blair ... 30 day MBG

2267	The Macintosh Bible (2nd Edition)	19.
------	-----------------------------------	-----

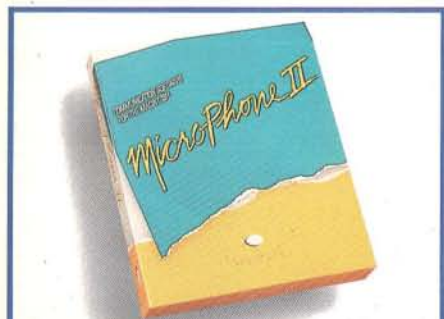
## ★I/O Design ... 30 day MBG

2379	MacLuggage Imageware II	49.
2376	MacLuggage Macinware Plus	64.
2381	MacLuggage Macinware SE	75.
6129	The Ultimate SE Carrying Case	79.

## ★Kensington ... 30 day MBG

MacConnection carries the entire line of Kensington's accessories. A partial listing follows.

2577	Mouseway Pad	7.
2563	Mouse Pocket ADB	8.
2569	Mac Plus/SE w/System Saver Cover	9.
2558	ImageWriter II Dust Cover	9.
2589	Universal Printer Stand	15.
4970	Modem/FAX Protector 10	15.
4971	Modem/FAX Protector 20	25.
4126	LaserWriter II Dust Cover	17.
2580	Mac II Stand	20.
2545	Universal Copy Stand	22.
2573	Tilt/Swivel (platinum)	22.
2578	Extra Long ADB Keyboard Cable	25.
2579	Mac II Monitor Cable Extension Kit	33.
4972	Power Tree 10	19.
4973	Power Tree 20	27.
4974	Power Tree 50	54.



## Software Ventures ... 30 day MBG

MicroPhone II 3.0—Honorable mention—1990 MacUser Editors' Choice Award for Best Communications Product. "Support for ZMODEM protocol. Let's you create a complete custom front end" ..... \$215.

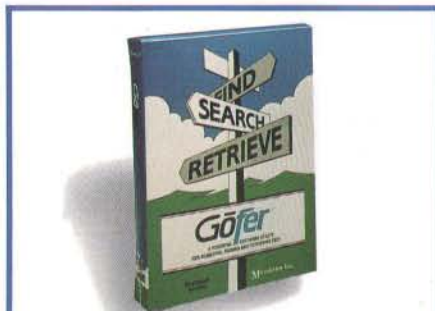
2559	Apple Security Kit	\$33.
2568	Maccessories SuperBase	33.
2585	Printer Muffler 80	43.
4070	System Saver SE	52.
2566	System Saver Mac (platinum)	63.
2567	System Saver Mac (beige)	63.
2546	A-B Box (DIN-8)	63.
2556	Maccessories Anti-Glare Filter SE	33.
5064	Apple Color Monitor Polarizing Filter	63.
5065	Full Page Display Polarizing Filter	63.
5066	Two Page Display Polarizing Filter	135.
4941	Mac II Monitor Stand	64.
4643	Mac II Stand and Cable Kit	64.
2561	MasterPiece Mac II	105.
5894	PowerBacker 360	269.
5577	PowerBacker 450	339.
5578	PowerBacker 520	399.
5230	PowerBacker 800	749.
5228	PowerBacker 1200	949.

## ★MacConnection ... 60 day MBG

4623	Solid Oak Disk Case (holds 90 disks)	32.
------	--------------------------------------	-----

## ★Mobius Technologies ... 60 day MBG

4470	Fanny Mac QT	55.
------	--------------	-----



## Microlytics ... 60 day MBG

Gofer 2.0—Honorable mention—1990 MacUser Editors' Choice Award for Best Word Processing Utility. "GOfer 2.0 can quickly browse through the text in hundreds of pages in hundreds of documents" ..... \$45.

## ★Moustrak ... 60 day MBG

Available in blue or gray.

2694	Moustrak Pad (standard 7" x 9")	8.
2692	Moustrak Pad (large 9" x 11")	9.
2693	Moustrak Pad L/F (9" x 11")	10.

## Ribbons

Available in black, blue, brown, yellow, green, orange, purple, red, silver & gold.

3255	ImageWriter II Ribbon	4.
3261	ImageWriter II 4-Color Ribbon	9.
3270	ImageWriter II Rainbow Six Pack	20.
3260	ImageWriter LQ Black Ribbon	17.
4011	ImageWriter LQ 4-Color Ribbon	20.

## ★Sopris Softworks ... 60 day MBG

4171	Mac SE Std. Keyboard Cover (navy)	15.
4019	Mac SE & Ext. Keyboard Cover (navy)	15.
4017	ImageWriter II Cover (navy)	11.
4018	LaserWriter II Series Cover (navy)	17.
4012	High Trek ImageWriter II Carry Case	49.
4013	High Trek Mac Plus Carry Case	59.
4014	High Trek Mac SE & Ext. Kybd. Case	69.
5877	Mac II Monitor Carry Case	59.
5839	Mac IIcx CPU & Kybd. Carry Case	69.
4861	SE Protection Pak (std. keyboard)	65.
4862	SE Protection Pak (ext. keyboard)	75.



## Abaton ... 30 day MBG

InterFAX 24/96 Modem—1990 MacUser Editors' Choice Award for Best Communications Product. "Its Fax software is easy to use & produces excellent output: it can also send & receive in the background" ..... \$419.

## ★Targus ... 60 day MBG

3618	ImageWriter II Carry Case	45.
3617	Mac Plus/SE Carry Case	55.
4015	Mac SE & Ext. Kybd. Carry Case	69.
6116	Mac IIcx Carry Case	85.

## ★Tripp Lite ... 30 day MBG

6199	Isobar 4 (surge suppressor, 4 outlets)	49.
6200	Isobar 6 (surge suppressor, 6 outlets)	59.

## OUR POLICY

- We accept VISA and MASTERCARD.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order.
- No sales tax.
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped First Class Mail.
- International orders U.S. \$250 minimum.
- Upon receipt and approval, personal and company checks now clear the same day for immediate shipment of your order.
- Corporate P.O.s accepted subject to credit approval.
- COD max. \$1000. Cash or certified check.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- To order, call us anytime Monday through Friday 9:00 AM to 1:00 AM EST, or Saturday 9:00 AM to 5:30 PM EST. You can call our business offices at 603/446-7711 Monday through Friday 9:00 AM to 5:30 PM EST.

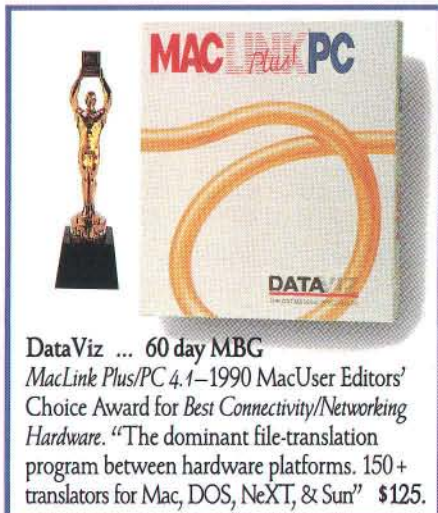
## SHIPPING

**Continental US:** Barring massive computer failures and other natural or unnatural catastrophes, all credit card orders phoned into MacConnection weekdays by 8 PM EST will ship Airborne Express the same night for delivery the next business day, except for those within UPS Ground Zone 1 (which is also an overnight service). Saturday delivery available to many areas upon request. Some areas require an additional day delivery. The total freight charge on any order placed with MacConnection is only \$3.

**Hawaii, Alaska and Outside Continental US:** Call 603/446-7711 for information.



# soon as you're ready.



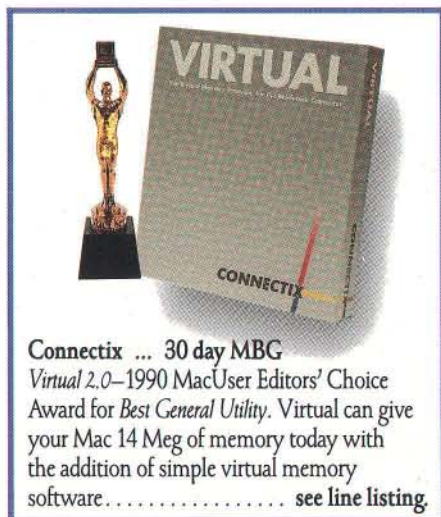
**DataViz ... 60 day MBG**  
*MacLink Plus/PC 4.1—1990 MacUser Editors' Choice Award for Best Connectivity/Networking Hardware. "The dominant file-translation program between hardware platforms. 150+ translators for Mac, DOS, NeXT, & Sun" \$125.*

<b>Caere</b>		
4476	OmniPage 2.1	539.
<b>★CoStar ... 30 day MBG</b>		
6067	LabelWriter Labels	11.
6090	LabelWriter	185.
<b>★Cutting Edge ... 30 day MBG</b>		
3988	CE 105ADB Keyboard w/QuickKeys	135.
<b>★Datadesk ... 30 day MBG</b>		
1818	HyperDialer	29.
1819	MAC-101 Keyboard (beige)	139.
1820	MAC-101 Keyboard (platinum)	139.
1821	MAC-101 Keyboard (ADB)	139.
<b>★GDT Softworks ... 30 day MBG</b>		
6256	Printlink Collection	59.
6151	JetLink Express 1.02	89.
6255	Expressive Fonts	119.
6257	JetLink/Expressive Fonts Bundle	159.
<b>Hewlett Packard</b>		
6514	HP DeskWriter Printer	call
<b>★Kensington ... 30 day MBG</b>		
2576	Turbo Mouse for Mac Plus 3.0	109.
2547	Turbo Mouse ADB 3.0	109.
<b>Koala</b>		
2593	MacVision 2.1	219.
<b>★Kraft Systems ... 60 day MBG</b>		
2600	3-Button QuickStick	39.
4082	3-Button QuickStick ADB	49.
6099	ADB Trackball (with foot pedal)	79.
<b>★Logitech ... 30 day MBG</b>		
5082	ScanMan Mac	319.
<b>★LYNX Computer ... 30 day MBG</b>		
1211	LYNX Trackball	special 49.
1212	LYNX Trackball ADB	special 49.
<b>★Microseeds Pub. ... 60 day MBG</b>		
4843	WristMac 1.0	145.
5018	WristMac Executive 1.0	189.
<b>★Mobius Technologies ... 60 day MBG</b>		
6126	Cordless Mouse	99.
<b>★Mouse Systems ... 30 day MBG</b>		
2808	A+ Mouse	59.
2809	A+ Mouse ADB	79.
<b>★Nutmeg Systems ... 30 day MBG</b>		
4096	19" Monitor for Mac SE	1195.
5680	19" Monitor for Mac SE/30	1195.
4097	19" Monitor for Mac II	1195.
6240	30/2 Interface (SE/30 video board)	499.
<b>Olduvai Software</b>		
5138	Read-It! OCR Personal 2.1	125.

3034	Read-It! OCR 2.1	\$245.
<b>★Orange Micro ... 30 day MBG</b>		
4488	Grappler Spooler	47.
3036	Grappler C/Mac/GS 2.0	78.
4487	Grappler LS 1.0	103.
6229	Grappler LX	129.
<b>Summagraphics</b>		
4298	BitPad Plus ADB	319.
<b>TheComplete PC</b>		
6104	TheComplete Half-Page Scanner/400	315.
6103	TheComplete Page Scanner	759.
<b>★Thunderware ... 30 day MBG</b>		
3648	ThunderScan 5.0 with PowerPort	185.
4994	LightningScan	369.
3645	Mac II Power Accessory	45.

## MEMORY & DRIVES

<b>1 Meg SIMMs</b>		
1107	Low profile 80 nanoseconds SIMMs at the best prices. 2 year warranty	89.
<b>★Cutting Edge ... 30 day MBG</b>		
3989	800k External Disk Drive (platinum)	149.
5133	20 Meg Hard Drive	359.
3990	30+ Meg Hard Drive	429.
3991	45+ Meg Hard Drive	489.
5275	65+ Meg Hard Drive	589.
5276	80+ Meg Hard Drive	649.
5456	44 Meg Removable Drive	799.
5736	44 Meg Removable Cartridge	109.
<b>★Dove Computer ... 60 day MBG</b>		
1802	Dove Tool Kit	15.
1801	SCSI Interface/Port	109.
5879	MaraThon Serial/Parallel	195.
1807	MacSnap 524E	185.
1809	MacSnap 524S	239.
1811	MacSnap 548E	419.
1812	MacSnap 548S	479.
1804	MacSnap 2S	189.
1805	MacSnap 4S	369.
<b>ACCELERATOR BOARDS</b>		
1793	MaraThon 020 MSE1	419.
1794	MaraThon 020 MSE2 (1 Meg)	689.
1795	MaraThon 020 MSE3 (math chip)	579.
1796	MaraThon 020 MSE4 (1 Meg/chip)	869.
5192	MaraThon 020 MSE5 (4 Meg)	799.
5193	MaraThon 020 MSE6 (4 Meg/chip)	979.



**Connectix ... 30 day MBG**  
*Virtual 2.0—1990 MacUser Editors' Choice Award for Best General Utility. Virtual can give your Mac 14 Meg of memory today with the addition of simple virtual memory software. see line listing.*

4663	MaraThon 030 Accelerator 32 MHz	\$869.
5878	MaraThon 030x Accelerator	969.
5880	MaraThon 030 SE/30 Accelerator	969.
5623	MaraThon Racer	159.
<b>ACCELERATORS (020) W/ETHERNET</b>		
5391	FastNet LAN 1	949.
5390	FastNet LAN 2 (1 Meg)	1349.
5389	FastNet LAN 3 (math chip)	1219.
5388	FastNet LAN 4 (1 Meg/chip)	1549.
5387	FastNet LAN 5 (4 Meg)	1439.
5386	FastNet LAN 6 (4 Meg/chip)	1679.



**Informix**  
*WingZ 1.1—1990 MacUser Editors' Choice Award for Best Spreadsheet. "WingZ is not just a powerful spreadsheet, it's a sophisticated development environment for customized applications." 3-D graphics and tools .. \$249.*

<b>★Kennect Tech. ... 30 day MBG</b>		
5631	Rapport	199.
5632	Drive 2.4 (includes FastBack II)	329.
<b>★SuperMac Tech. ... 30 day MBG</b>		
<i>SuperMac drives include SuperSpool, SuperLaserSpool, Diskfit and Manager</i>		
5452	Dataframe 20	529.
5447	Dataframe XP 30	629.
5448	Dataframe XP 60	859.
5449	Dataframe XP 100	1149.

## STORAGE MEDIA

<b>★Verbatim ... 60 day MBG</b>		
3772	3 1/2" DS/DD Disks (10)	15.
3773	3 1/2" HD Disks 1.44 Meg (10)	29.
<b>★Sony ... 60 day MBG</b>		
3297	3 1/2" DS/DD Disks (10)	13.
6148	3 1/2" DS/DD Disks 3 Pak (30)	30.
3298	3 1/2" HD Disks 1.44 Meg (10)	24.
6375	3 1/2" HD Disks 3 Pak (30)	60.
<b>★MAXELL ... 60 day MBG</b>		
2792	3 1/2" DS/DD Disks (10)	14.
2793	3 1/2" HD Disks 1.44 Meg (10)	27.
<b>★3M ... 60 day MBG</b>		
3943	DC2000 Tape Cartridge	20.

## ACCESSORIES

<b>Apple Computer</b>		
1113	Black ImageWriter Ribbon	10.
1114	LaserWriter Plus Toner Cartridge	109.
1115	LaserWriter II Toner Cartridge	115.
<b>★Avery ... 60 day MBG</b>		
4864	Disk Labels 3 1/2" (Qty. 250)	13.
5392	Disk Labels—Laser 3 1/2" (Qty. 630)	29.
5403	Address Labels 1 7/16" x 4" (Qty. 1000)	9.







# Macintosh Training That Works

*"I have been using FileMaker for about a year now and decided to get the MacAcademy tape to see how the program was presented, the content, and to see if other tapes would be useful. After looking at the tape I promptly ordered three more! Needless to say I was pleased, as the tapes are professionally done and most useful. You and your company do a fine job."* Mr. James H. Patterson, M.D.

DAYTONA BEACH, FL- "There's got to be a faster, easier, and less expensive way!" This statement sums up the frustration that Randy Smith felt three years ago as he tried to find training for the Macintosh computer.

That frustration led to the creation of MacAcademy, now the nation's leading Macintosh training program, and the recent introduction of the country's **first complete Macintosh Video Training Series**. MacAcademy teaches over 18,000 people each year in 65 major metro areas. The program is proud of the fact that both beginning and advanced Macintosh users, from over 12,000 companies large and small, have found MacAcademy's live workshops to be an excellent, low priced training solution.

In order to offer additional training, MacAcademy's next step was to put each of their dynamic training workshops on video. (And to offer an additional dozen training videos for programs not even offered at MacAcademy.)

Now you may choose from over 26 different, 2-hour, VHS MacAcademy Videos for only \$49 each. A complete list of programs can be found in the coupon below.

MacAcademy Video Training tapes offer tremendous advantages for today's Macintosh user. When using the videos you actually *see* the steps take place on a Macintosh screen. A small inset will show you the instructor and the mouse or keyboard. The instructors featured on the videos are MacAcademy's top rated teachers who have trained employees of all but two of the USA's Fortune 500 companies and who have each received a consistent rating of *excellent*.

Training videos offer the valuable advantage of building a learning and reference library. If you ever want to brush up on a technique, simply go back to the video and review the technique demonstrated. If you hire a new employee, simply have them review the video for the program they'll be using. Videos offer the unique flexibility of teaching both individuals or hundreds of people at one sitting.

In addition to a super \$49 price, the videos also carry a 30-day satisfaction guarantee. If you're not totally satisfied, simply send the tape back for a full refund.

MacAcademy will continue offering the nation's highest rated live training courses in major cities. But in addition, you may also build your Macintosh training library.

Videos may be ordered by phone with credit card information, or by mail with check, credit card, or purchase order. You may also send orders by FAX. Your business is appreciated and your satisfaction is guaranteed.



The MacAcademy Video Library features over 26 Macintosh training tapes. Each two hour VHS video tape captures the unique and effective teaching and learning techniques of MacAcademy's top instructors.

## MacAcademy<sup>TM</sup> Video Training Series

477 S. Nova Rd. Ormond Beach, FL 32174 Dept. MW490

904-677-1918 FAX 904-677-6717

**Videos Only \$49 Each** (Check desired tapes)

- |                                                  |                                                    |
|--------------------------------------------------|----------------------------------------------------|
| <input type="checkbox"/> Beginning Mac (#1)      | <input type="checkbox"/> Advanced FileMaker II     |
| <input type="checkbox"/> Beginning Mac (#2)      | <input type="checkbox"/> Beginning Word 4.0        |
| <input type="checkbox"/> Advanced Mac            | <input type="checkbox"/> Advanced Word 4.0         |
| <input type="checkbox"/> Beginning Adobe Ill.    | <input type="checkbox"/> Beginning QuarkXPress     |
| <input type="checkbox"/> Intermediate Adobe Ill. | <input type="checkbox"/> Intermediate QuarkXPress  |
| <input type="checkbox"/> Super Paint             | <input type="checkbox"/> Advanced QuarkXPress      |
| <input type="checkbox"/> Beginning PageMaker     | <input type="checkbox"/> Dollars and Sense         |
| <input type="checkbox"/> Intermediate PageMaker  | <input type="checkbox"/> Works: Integration        |
| <input type="checkbox"/> Advanced PageMaker      | <input type="checkbox"/> Works: Word Processing    |
| <input type="checkbox"/> Beginning Excel 2.2     | <input type="checkbox"/> Works: Data Base          |
| <input type="checkbox"/> Intermediate Excel 2.2  | <input type="checkbox"/> Works: Spread Sheet       |
| <input type="checkbox"/> Advanced Excel 2.2      | <input type="checkbox"/> HyperCard Basics          |
| <input type="checkbox"/> Beginning FileMaker II  | <input type="checkbox"/> Mac Networking Techniques |

Number of Videos: \_\_\_\_\_ Number x \$49.00: \$ \_\_\_\_\_

Add \$1 Per Video Shipping: \$ \_\_\_\_\_

NAME \_\_\_\_\_ Florida Residents Add 6%: \$ \_\_\_\_\_

COMPANY \_\_\_\_\_ Total: \$ \_\_\_\_\_

STREET (no P.O. Boxes please) \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

TELEPHONE \_\_\_\_\_

CREDIT CARD NO. \_\_\_\_\_

SIGNATURE \_\_\_\_\_ CARD EXP. DATE \_\_\_\_\_

©1990 Florida Marketing International, Inc.



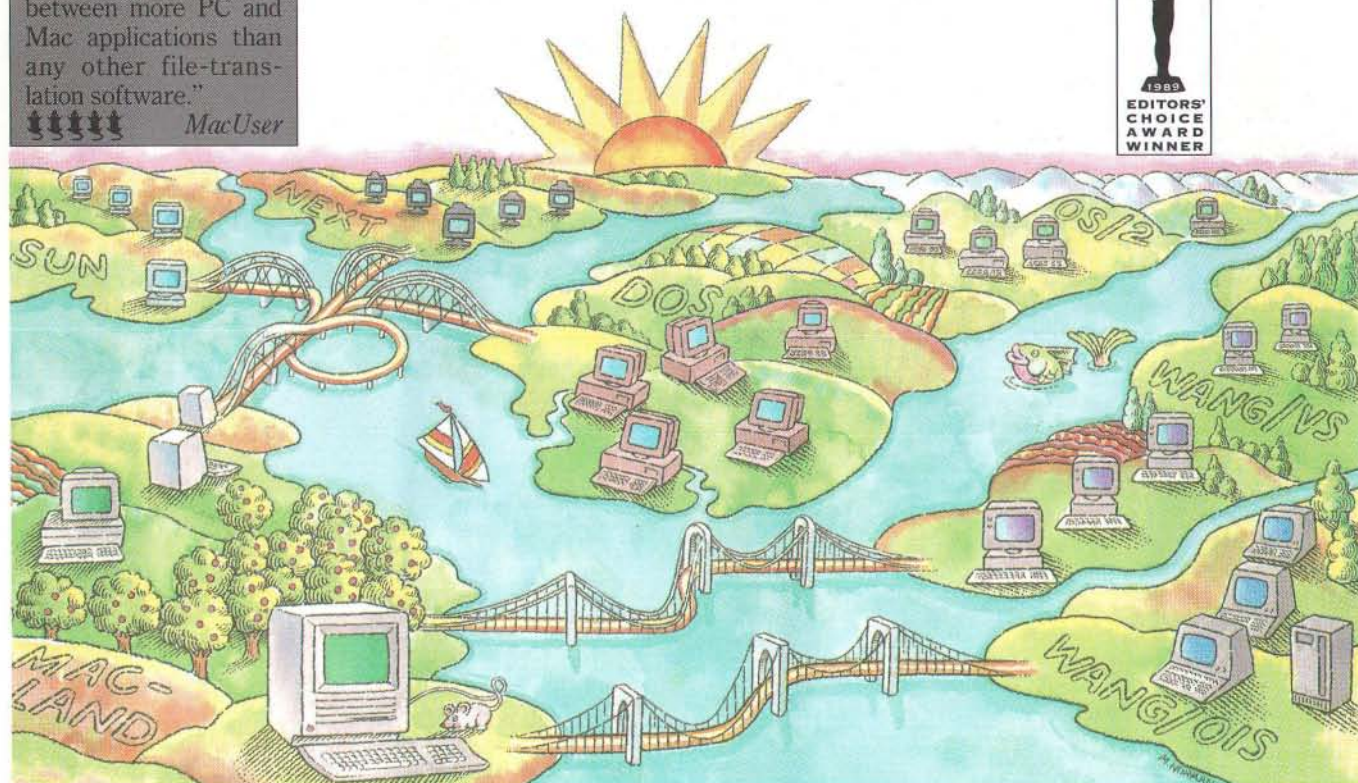
# NOW, MACLINK®PLUS TRANSLATES EVERYTHING UNDER THE SUN

"Still the standard... offers more translations between more PC and Mac applications than any other file-translation software."



MacUser

MacUser



The award-winning software package that transfers and translates files between Macintosh and DOS or OS/2 programs now does the same for Sun worshippers. And for the NeXT world.

With MacLinkPlus/PC, you can now send files in either direction between Macintosh and virtually any other desktop environment. Files arrive in the new environment with the correct styles and formats in place—just as if they had been created there.

MacLinkPlus/Wang OIS and MacLinkPlus/Wang VS provide the same bi-directional connectivity between Macintosh and Wang.

## TRANSFERS AND TRANSLATES

The MacLinkPlus/PC package arrives with everything you need—software, manual, a direct connect cable (a Hayes modem or compatible also works), and our full library of over 100 translators.\*

If you don't need file transfer capabilities (maybe your Macs and PCs already share a network or server), then simply order MacLinkPlus/Translators. It's the same package without the cable and communications capabili-

ties. And, it's the ideal software purchase for anyone with a Macintosh FDHD SuperDrive or external drive that reads DOS disks.

## INSTANT PASSPORT TO EVERYWHERE

Make incompatibility a thing of the past with the MacLinkPlus family of Databridge products. For the name of your nearest DataViz dealer, call 203-268-0030 today.

*\*takes advantage of special connections built into MacWrite® II from Claris™*

*All product names are trademarks of their manufacturers.*



**DATAVIZ**  
THE DATABRIDGE SPECIALISTS

Circle 281 on reader service card



# They're No Angels

A PRISON USER GROUP GIVES AS GOOD AS IT GETS

BY DEBORAH BRANSCUM

A couple of years ago a man named Charlie needed information. He was taking college courses that gave him access to a Macintosh, but not much more. He had outdated programs, no manuals, and no teachers to talk to directly. So he

checked *Macworld's* 1988 user group directory and wrote to several MUGs asking for help. The Worcester (Massachusetts) Mac User Group was the only organization to respond, but it did more than simply write back. In February of 1989, volunteers began meeting monthly with Charlie and his friends, kicking off the Bad Apples, a special interest group for inmates of the Massachusetts Corrections Institution, Lancaster Pre-Release Facility.

"We went there thinking we would be teaching them everything from soup to nuts," says Ted Verdone, who is a regular at Bad Apple SIG meetings. "We found out the group was fairly knowledgeable. Since then a couple of them have bought their own Macintosh machines and they're doing quite well. Now, instead of my going over there and helping them, I go over there and ask them questions."

Like Charlie (who asked that we use his first name), several prisoners at Lancaster became interested in the Macintosh because of courses they were taking. They received assignments from college teachers via modem and sent their work back the same way. The students wanted information about the Mac but had no easy way to get it. "We decided that since these guys couldn't get to our meetings, we'd get a volunteer to go once a month," says David Peller, WMUG executive director. "They always have questions for us, lots and lots of ques-

tions. We got them a set of manuals, donated a copy of *The Macintosh Bible*, and let them copy a set of public domain software. They've been doing great."

The Bad Apples have all the problems of a typical user group. Maintaining membership is one, as people leave the program for parole. "We have had as many as ten people in the group; now it's down to four," says Verdone. Charlie says the group is trying to rebuild by appealing to the college students at the prison.

Another familiar problem is technical support. Charlie, who practices what he calls "bedtop" publishing in his 6-by-9-foot room, writes a column for *RAMblings*, the WMUG newsletter. In the September issue he described problems with a printer: "I must rewire everything from scratch every time I go to press. With switches being located in awkward, out-of-the-way places, I leave them on and use the cord as the on/off mechanism. The result was that I fried the circuit board. The next morning I spent a solid half hour of consecutive dialing to reach the technical service 800 number in New Jersey and got nothing but a busy signal. I made several attempts on three or four occasions during the day and finally made a call to the store where it was purchased. The clerk said he couldn't tell what was wrong over the phone, so 'bring it in.' Yeah, sure. I'll just hop into the warden's cruiser,



turn on the blue lights, and zip into Worcester with my printer tied on the luggage rack."

"It's interesting to see how hungry for information these guys are," says Peller. "They wait all month for us to get there and can't thank us enough for coming. And since they've been up there, they're starting to make money with the Mac." Despite the headaches of being a Mac fan in prison, Charlie has become a whiz at Microsoft Word 4.0, HyperCard, and Excel and can contribute expertise to WMUG in several areas. "The Worcester Macintosh Users group has been sending people over every month," says Charlie. "We, in turn, have been able to teach them what we've learned." One former member, now on parole, developed real-estate-management software while in prison. He is now preparing to buy a Macintosh and use the software in his business. Charlie hopes to develop a specialty in custom spreadsheets for small businesses, work he is beginning now and can carry with him when he leaves Lancaster.

(continues)



# Introducing An \$1,100 Display System For \$667



**\$897**

PixelView II



**\$667**

PixelView I

**"I want you to test drive one for 30 days.  
Love it or return it!"**

*R. Eibensteiner*

Ronald Eibensteiner, President/CEO

**"I used to think a large screen was a luxury. Now I can't live without it!"**

Until now, high quality large screen displays cost more than a Mac Plus. Once I got over the sticker shock, I found that a large screen display was the greatest productivity enhancement I'd experienced. I challenged our own engineers to build display systems with the quality and features of the market leader at prices anyone can justify.

**PixelView™ . . . it didn't happen overnight!**

We sourced tubes from the same manufacturer as Apple. We chose the same screen phosphor used by Apple and Radius, but to completely eliminate irritating flicker, we boosted our vertical refresh rate to 78hz. Then we added enhancements like pop-up menus, enlarged cursor and menu options, screen saver and screen copy. And believe it or not, we did it at a \$667 price!

15" Portrait Display	Radius	Mirror
Flat screen	yes	yes
Anti-glare	yes	yes
Both screens active	yes	yes
WYSIWYG	no	yes
78hz vertical refresh rate	no	yes
Pop-up/tear-off menus	yes	yes
Cursor sizing	yes	yes
Menu bar sizing	yes	yes
Screen saver	yes	yes
Screen copy	no	yes
One year warranty	yes	yes
Dealer markup	yes	no
Street price	<b>\$1,100*</b>	<b>\$667</b>

\* "This was the best price we could find on a Radius FPD system." (2/29/90)

**From Mac Plus to Portable—we've got you covered.**

We have PixelView display systems for the Mac Plus, SE, SE30, II, Iix, Iicx, Iici, and Mac portable! And PixelView systems come in single or dual page screens.

**Take one for a test spin.  
(But don't say I didn't warn you!)**

Take my modem. Take my (gulp) hard drive, but leave me my monitor! I feel that strongly, and believe you will too. Don't go another day squinting and scrolling! Try any of our display systems for 30 days. If you aren't convinced that your money was well spent, we want it back! 99

**MIRROR  
TECHNOLOGIES**

Call us today at

**1 800 654-5294**



# Buy At Factory Prices!



## V40 40Mb Hard Drive

How can we sell our New V40 for \$447? This price breakthrough is made possible by new drive technologies and our volume purchases. The V40 drive ships formatted, tested and loaded with 10Mb of software and includes all the features found on our other drives; cables, international power supplies, external SCSI switching, and cooling fan. One year warranty. Sorry, no dealer inquiries.



## 20Mb Internal Hard Drive

Sleek, fast, and quiet. International power supply, SCSI switching, fan, and cables are standard equipment. Shipped formatted, tested and loaded with over 10Mb of software. Internal and external models available for most Macs. Two year warranty.

Model	Mb	Int.	Ext.
M20	20	\$367	\$447
M30	30	\$397	\$497
M45	45	\$467	\$547
M60	60	\$597	\$677
M80	80	\$667	\$747



## MP-Series 40Mb Internal

These are the premium drives that reviewer's rave about! Similar to the M Series, except our MP Series drives contain the fastest mechanisms in the industry (the slowest of which is 19ms!). Internal and external models available for most Macs. Two year warranty.

Model	Mb	Int.	Ext.
MP40	40	\$467	\$ 567
MP80	80	\$797	\$ 887
MP100	105	\$857	\$ 947
MP170	170	—	\$1497
MP290	290	—	\$1997
MP580	580	—	\$2997



## RM600 Erasable Optical

If you're saving huge files (like 24 bit images, scans, or large data-bases), the RM600 is the right solution for you! Our RM600 erasable optical delivers disk storage at the lowest cost per Mb. We've incorporated second generation technology to bring you the greatest speed and industry-wide compatibility. Full ISO/ANSI compliance. The RM600 incorporates our international power supply, SCSI switching, and whisper quiet cooling fan. One year warranty.



## RM42 45Mb Removable

Built around the Eddy Award winning SyQuest technology that has become the defacto standard for Macintosh removable media drives. With an average access time of 20ms, the RM42 is faster than most hard drives! The RM42 incorporates our international power supply, SCSI switching, and whisper quiet cooling fan. Two year warranty.



## VS300 Flatbed Scanner

The VS300 delivers crisp line art and dithered halftones at a fraction of the cost of most scanners. Complete with full function scanning software that even allows the VS300 to be used as a desk accessory! Byte magazine said it best: "If it were my money, I'd buy the Mirror . . . It's price/performance ratio is unequalled." And for a limited time, we're throwing in Zedcor's DeskPaint™ graphics software (\$99 value) and Olduvai's Read It!™ optical character recognition software (\$495 value) at no additional charge!



## T150 Tape Backup

Don't settle for a tape backup system that's designed around a cheap audio cassette derivative! Our T150 is a European engineered drive (Siemens of Germany) that packs 150Mb of your precious data onto solid 3M DC600 type cartridges, at 3 times the speed of most competing solutions. And it's painless! Our custom software facilitates automated (unattended) backups, mirror-image, file by file, or incremental backups.



## DriveCare

Dead Ehman or Apple Drive? Our experts can breathe new life into almost any fixed or removable hard drive. And we recover data too! SuperMac, Jasmine, Rodime, CMS MacBottom, and others. 20-500Mb. They're all welcome! (ie: 40Mb start at \$277). Call our Technical Support Hotline today for details! 612-633-2105.

**MIRROR**  
TECHNOLOGIES

TO ORDER CALL  
TOLL FREE

**1 800 654-5294**

TECHNICAL SUPPORT HOTLINE: (612) 633-2105 Hours: Mon-Fri 8am-5pm CST

2644 Patton Road, Roseville, Minnesota 55113 (612) 633-4450 FAX: (612) 633-3136

Circle 424 on reader service card



All prices/specifications subject to change without notice. Call for current pricing, warranty, and promotional details. Mirror and MirrorImage are trademarks of Mirror Technologies, Inc. All other brand and product names are trademarks or registered trade names of their respective holders. No surcharge for Visa, MasterCard, Discover, and Telecheck.



## Have you seen these faces?

Unless you order type from Bitstream, you may not be able to find these faces:

**ITC Fenice®**  
*Snell Black*  
**Bernhard Modern**  
**Futura Black**

Bitstream has the largest high quality library for Macintosh® driven laser printers and typesetters—over 1,000 typefaces!

And among those faces are styles that you need but just can't get anywhere else.

Send for a **free** Bitstream typeface catalog by circling the Reader Service number indicated below. To order type, call Bitstream direct at **1-800-237-3335**.

*Copy set in Bitstream Charter, available only from Bitstream.*


BITSTREAM is a registered trademark of Bitstream Inc. Macintosh is a registered trademark of Apple Computer Inc. ITC Fenice is a registered trademark of International Typeface Corporation.

Circle 511 on reader service card.

## SERVICE HEROES

**R**eaders Bob Eldred of Pleasanton, California, writes to praise "an innovative piece of software which is supported by a first-rate customer service department." Eldred bought Practica Musica from Jeffrey Evans, owner of Ars Nova Software, in order to learn more about music notation. But Eldred ran into problems getting his MIDI keyboard to work properly with one module of the program, which was running on a Macintosh IIcx.

"I was able to reach Jeff on his toll-free number. Over the course of many weeks, Jeff persevered in trying to find a fix," writes Eldred. Evans acquired additional equipment to try to duplicate the problem and test several software upgrades, sent free of charge. "After much joint troubleshooting, I discovered the solution by changing an obscure setting on my keyboard. The problem never was in the software or the equipment,

but in my limited knowledge of MIDI." Despite this discovery, Evans was "most gracious in assuring me that all the effort and expense was well worth it. It's the first time I have ever had such a pleasurable experience from what is normally a nightmare."

Gregory Gunter of the Virgin Islands writes of good service after buying Omnis from a local dealer. Several weeks after the purchase, Gunter read about the Omnis Express portion of the program, which was not included with his package. He faxed Blyth Software to inquire about the missing portion. Julie Andres from Blyth called and said the program Gunter had bought was several years old. She sent him the complete upgrade, plus the Express section, at no cost. "In addition, I was offered the chance to purchase the new Omnis 5 at a substantially reduced price. Sure enough, the complete package arrived about a week later in the mail."

Charlie agrees that the Worcester group has helped him in many ways, but clearly WMUG has also benefited. "It backfired on us," says Verdone with good humor. "We thought we'd be giving, giving, giving, and now the students have excelled their teachers. They're helping me now."

The Bad Apples is a success story that illustrates a user group at its best. Charlie needed help with his Macintosh. He got it. And now he's helping others.

(Call 508/476-7014 for information about joining the Worcester Macintosh User Group. For information on user groups in the United States, call Apple toll-free at 800/538-9696, ext. 500.)

### NAUGC Rides Again

The annual National Apple User Group Conference is slated for Arlington Heights, Illinois, April 20-22. This year the conference is being cosponsored by 11 Chicago-area Apple II and Macintosh user groups. Microsoft CEO Bill Gates will help kick off the conference as the keynote speaker. Call 708/

518-2642 or 708/665-6319 for details, or try AppleLink at UG0083.

### Portland Outing

The Portland (Oregon) Macintosh User Group sponsors a MacCamp twice a year at the Silver Falls State Park Conference Center. The spring classes concentrate on business-productivity software such as Word, Excel, and FileMaker. People bring Macs, set up an AppleShare network of 40 to 50 people, and work up a sweat playing Maze Wars on Saturday night.

MacCamp is open only to PMUG members. The next MacCamp is scheduled for late April. Call PMUG at 503/228-1779 for more information.

### Smoke Gets Digitized

A fire department user group formed last fall "brings two neighboring fire departments together for a common cause besides mutual aid for an emergency response," reports Kevin Farrell of The Singery Fire Company.

The Aetna Hose, Hook and Lad-  
(continues)



# Death Taxes Software Piracy



*We can save you from one of them.*

**S**orry. Death we can't do anything about. As for taxes, when you use our product you'll probably wind up paying more. But software piracy: there we offer some help. Our family of software protection devices (dongles) have improved unit sales for over 2,000 companies around the world. Our products can be used in the Macintosh, MS-DOS, and OS/2 environments.

## **Build Your Own Custom Protection Environment**

Use our patented "dual-locking" ASIC chip as the basic building platform. Next, add options like: on-the-fly read/write memory, write-once or multiple-write locking codes. Then add your own programming creativity to build a

protection environment best suited to your product.

Users attach the device to their SCSI port, and programs won't run without it. Back-up copies, hard disk and AppleTalk operation are not interfered with.



## **Your Intellectual Property Belongs To You**

And if you don't protect it, who will? Our products offer the most equitable way to protect your interests without sacrificing the rights of your customers. Call us today for information and demonstration units.

## **Software Security**



1011 High Ridge Road - Stamford, CT 06905

**1-800-333-0407 ext. 106**

203-329-8870 Fax 203-329-7428 BBS 203-329-7253

AppleLink™ D2379

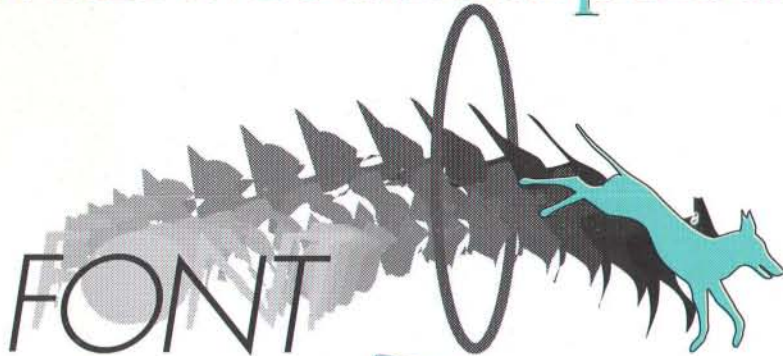
Macintosh, AppleTalk are trade marks of Apple Computer Inc., Activator, Mactivator are trade marks of Software Security, Inc. illustration: detail from Michelangelo's Last Judgement

**Circle 463 on reader service card**



# Now you *can* teach an old font new tricks.

## With Metamorphosis.



With Metamorphosis, your fonts can veritably jump through hoops!

These are standard PostScript outlines - converted by Metamorphosis from an assortment of commercial fonts. Recognize any of your favorites?



Use your favorite PostScript drawing programs to create designs and logos from type outlines.

You can modify any PostScript typeface by converting it to outlines with Metamorphosis - like these variations on ITC Garamond®.

SMALL CAPS  
x-height  
Condensed  
Gray Scale

Metamorphosis™ provides a solution for one of the major frustrations with existing PostScript® type: the inability to access the outlines. With Metamorphosis, you can now manipulate type outlines in your favorite drawing programs and really get the most out of using your fonts!

Metamorphosis is a unique utility for converting your PostScript fonts into editable outline formats. The outlines that Metamorphosis produces are identical to the outlines of your original font.

By using any Adobe® PostScript printer, Metamorphosis converts your fonts into editable outlines for use in Aldus® FreeHand®, Adobe Illustrator®, or Brøderbund® TypeStyler®. You can also use them in Fontographer® to create custom type. And those fonts can be used in any Macintosh application.

With all that you have invested in PostScript and PostScript fonts, isn't it time you tried some new tricks with Metamorphosis?

Altsys is the leader in Macintosh font editing and design software. With Fontographer® and The Art Importer®, Altsys provides high quality software for printing, publishing, desktop publishing, and graphic arts.



The Altsys Family of quality PostScript products for Creative Types.

**Suggested Retail Prices**  
Metamorphosis: \$295.00  
Fontographer: \$495.00  
The Art Importer: \$179.00

**ALTSYS**  
Altsys Corporation  
720 Avenue F, #109  
Plano, TX 75074  
(214) 424-4888

Circle 35 on reader service card.

## APRIL APPLE WARRANTY WATCH



76 Months  
of Inadequate Warranty

der Company (known as the Newark [Delaware] Fire Department) and the William M. Singler Steam Fire Engine, Hose, Hook and Ladder Company, No. 1, of Cecil County (known as the Singler Fire Company) of Elkton, Maryland, formed the group to share computer information and techniques, according to Farrell. The all-volunteer departments want to make the most of recently purchased Mac hardware. Once established, this user group may expand to include other local aid departments. Contact Farrell at 301/398-3355 or his brother John in Newark at 302/454-3307 for more information.

### Consultants Gather

April is a busy month. The Macintosh Consultants Network is holding its Fourth International Macintosh Consultants Conference at the Rancho Bernardo Inn in San Diego, April 27-29, 1990. Jim Sheldon-Dean, MCN executive director, says one day will be devoted to specific consulting issues; the remaining time will be devoted to communications, connectivity, and project-management topics. MCN can be reached for details at 206/453-2729 or on Connect (MCN). **M**

Send nominees for sainthood to Service Heroes, Macworld, 501 Second St., San Francisco, CA 94107 or via AppleLink (Macworld1) or Connect (Branscum). Conversely, drop *Conspicuous Consumer* a line if a company is ignoring you. I will help solve your problem, if I can. If your user group is sponsoring an event, please get in touch.



# Power Meeting.



Become part of the Desktop Media<sup>SM</sup> revolution. Power up your Mac with the Proxima<sup>®</sup> Data Display<sup>®</sup> and make your meetings come alive.

Macintosh changed the possibilities for personal creativity and productivity forever. Now, by adding a Proxima Data Display from Computer Accessories Corporation, you can bring the same creative freedom to on-line, interactive *group* working sessions, training meetings, and presentations.

And it's all so easy.

Just plug the Data Display into your Mac. Set it atop any conventional overhead projector. And project precisely the same images shown on your computer screen – in dramatic simulated color or high-contrast monochrome – to give all your Mac graphics maximum visual punch.

With a Data Display, you can focus group attention on exploring what-if scenarios. Perform on-the-spot problem solving. Fine tune ideas in brainstorming sessions. And document spontaneity. All of which can turn a sales or financial discussion, training or education

gathering – any data-sharing session – into a more productive and more creative meeting.

Use your existing software exactly as you always have. Data Display works as a perfect enlargement of your Mac's monitor. For example, use

Aldus Persuasion<sup>™</sup> and the Data Display for "live delivery," high-impact presentations. Microsoft Excel<sup>™</sup> for group financial analyses or HyperCard<sup>®</sup> for conducting customized interactive training sessions. The opportunities and the potential to increase creativity and efficiency are limited only by your imagination.

Proxima Data Displays are available in two Macintosh compatible models. The Data

Display MultiMode<sup>™</sup> MacPac gives you complete Macintosh compatibility (all Mac IIs and compact Macs) and the best representation of color available to show off your Macintosh color graphics.

*Small, light and portable, Proxima Data Display goes where the action is.*



It comes with its own remote control so you can access both the Data Display and your Macintosh from anywhere in the room.

The Data Display 342, compatible with all compact Macs, sets the monochrome standard for high-contrast and bright, crisp images – even in lighted rooms.

Get the details on how Proxima Data Display power can make your meetings come alive. Call us for your nearest dealer at 800/582-2580, (in California 800/582-0852).



**PROXIMA**  
by Computer Accessories Corp.

Circle 171 on reader service card

Computer Accessories Corporation, 6610 Nancy Ridge Drive, San Diego, California 92121. 619/457/5500. In Europe, contact P.O. Box 165, 6190 AD Beek, The Netherlands, Horsterweg 24, Maastricht Airport, (0) 43-66 32 25/26, FAX (0) 43-64 92 20. Data Display and Proxima are registered trademarks and MultiMode is a trademark of Computer Accessories Corporation. Persuasion<sup>™</sup> is a trademark of Aldus Corporation, Excel<sup>™</sup> is a trademark of Microsoft Corporation and HyperCard<sup>®</sup> is a registered trademark of Apple Computer, Inc.





# Hand Tools.

You know what it's like.  
If you're in graphic arts, you know there's a lot of grunt-work.

Like rubbing-down type. And tracing and filling letters to comp-up headlines.

Trying to get true colors from a junkyard of dried-out markers.

Inking and re-inking rules and borders because of clogged pens.

T-squaring elements to be sure they're aligned and square.

Counting characters.

Spinning proportion wheels.

Tracing off the Lucy.

Wouldn't it be nice to spend more time exercising your brain instead of

your wrist? Exploring concepts? Refining layouts? Trying "What if" design options? Or experimenting with color combinations?

That's exactly what you can do using today's advanced layout, design, and illustration programs, the Macintosh II™ family of computers and a CalComp DrawingCard™ display system.

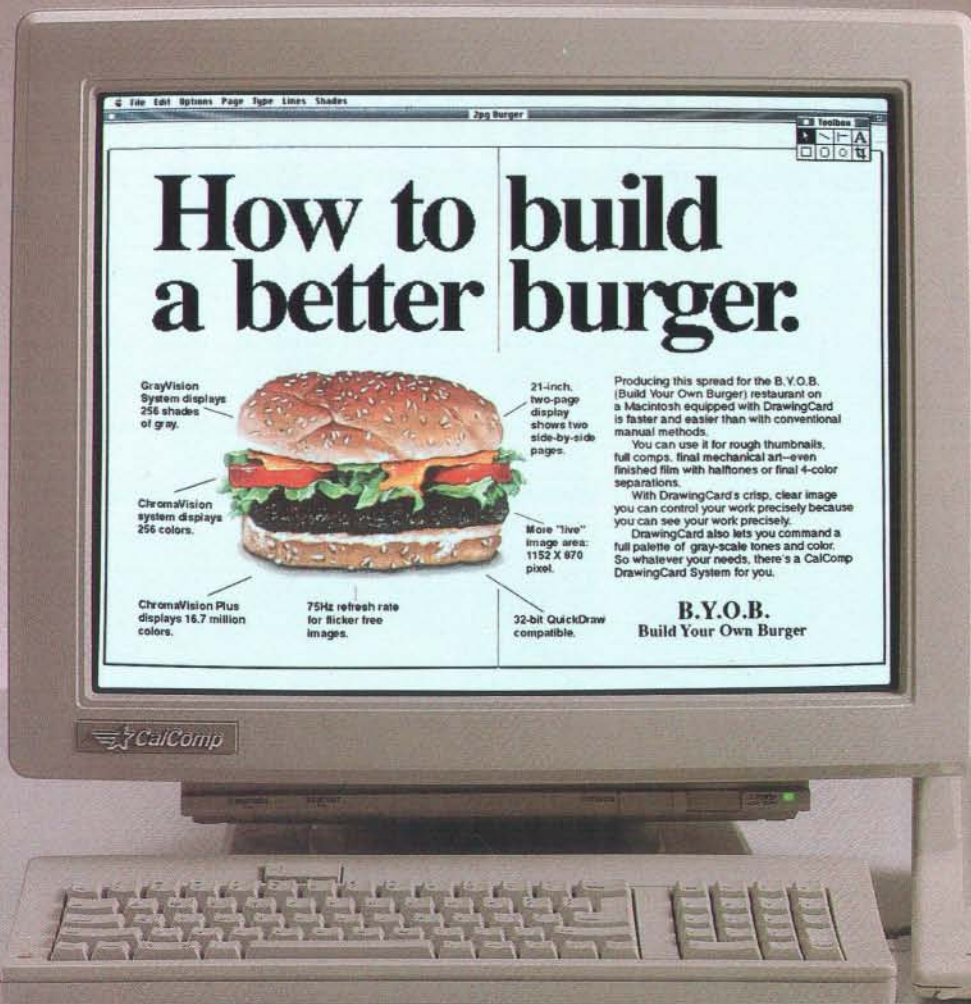
CalComp large screen displays help you get the most from your Macintosh. For one thing, they never let you lose sight of the big picture. DrawingCard is the first 21" system to give you two full pages of color side-by-side at actual size. That's critical when you're

designing double-truck ads, brochure spreads or creating a large horizontal illustration.

DrawingCard's flat screen eliminates distortion and with its excellent resolution and contrast you can see the effect of small changes in the colors right on the screen. Or evaluate the visual effect of half-point variations in type size and leading. You can even see the precise amount of letter overlap when you set your headlines "tight and touching."

And with DrawingCard displays, what you see on the screen is what you get on your printer because screen resolution is true 72 dpi.





21" ChromaVision Plus

# Power Tools.

There are three DrawingCard systems to choose from. Our 8-bit GrayVision display system with 256 shades of gray is ideal for desktop publishing and design projects using line art and black-and-white halftones.

Our 8-bit ChromaVision system with 256 colors is the perfect match for the great majority of desktop pub-

lishing, design and illustration projects where 4-color reproduction is needed.

And our 24-bit ChromaVision Plus system (shown above) with 16.7 million colors is the ultimate display where color accuracy is especially critical such as color retouching.

DrawingCard display systems are just one way CalComp, a worldwide

graphics leader, supports the arts on Macintosh. There's also WIZ,<sup>TM</sup> a new mouse system that combines the features of a traditional mouse with the power of a graphics pad. Plus a complete line of high-performance printers.

So stop using those antique hand tools today. After all, the graphic arts should be full of inspiration, not perspiration. For more information about DrawingCard displays, call:

**1-800-CalComp.**

In Canada, call: (416) 635-9010.

**Circle 122 on reader service card**

**We draw on  
your imagination.<sup>TM</sup>**

**CalComp**  
A Lockheed Company

21" GrayVision



21" ChromaVision



*DrawingCard monitors feature 75Hz refresh rate for flicker-free performance, large live image area (1152x870 pixels) and 72dpi screen resolution for true WYSIWYG.*



# Ain't nothing like the real thing.



## Quality speaks for itself. Optical and Removable drives by Microtech.

Microtech OR650 Optical Disk Drive.

650MB capacity. Rewritable. Erasable.  
Two year warranty.

Additional cartridges available. *Preformatted.*  
One year warranty.

**\$4795**

**\$249**

Microtech R45 Removable Cartridge Drive.

45MB capacity.  
Two year warranty.

Additional cartridges available.  
One year warranty.

**\$1099**

**\$99**

**R45**  
INCREASED  
PERFORMANCE!  
FASTER ACCESS  
TIME!

All drives bundled with MacTREE Plus, DS Backup,  
and demos of MICROSOFT EXCEL and 4<sup>th</sup> DIMENSION.

**1-800-325-1895** In CT (203) 468-6223



**MICROTECH**  
INTERNATIONAL, INC.  
158 Commerce St., East Haven, CT USA 06512

©1989 Microtech International, Inc. All product names and logos are trademarks or registered trademarks of their respective owners. Prices and specifications subject to change without notice. MasterCard and Visa accepted at no extra charge.

**Circle 458 on reader service card**





# The Color Squeeze

IMAGE PROCESSING DEMANDS A LOT OF RESOURCES,  
BUT HELP MAY BE ON THE WAY

T

BY BRUCE F. WEBSTER

he Macintosh is suffering from graphical overload. The advance of image technology has overwhelmed the memory, storage, and processor resources of all but the most powerful (and expensive) Macintosh systems. Put simply, color is

running out of space. Try this quick demonstration. Turn on a classic Mac (Mac Plus, SE, or SE/030) and create a screen shot by pressing Shift-⌘-3. The resulting PICT file is 21K in size. You can fit nearly 40 of these on a regular 800K floppy disk.

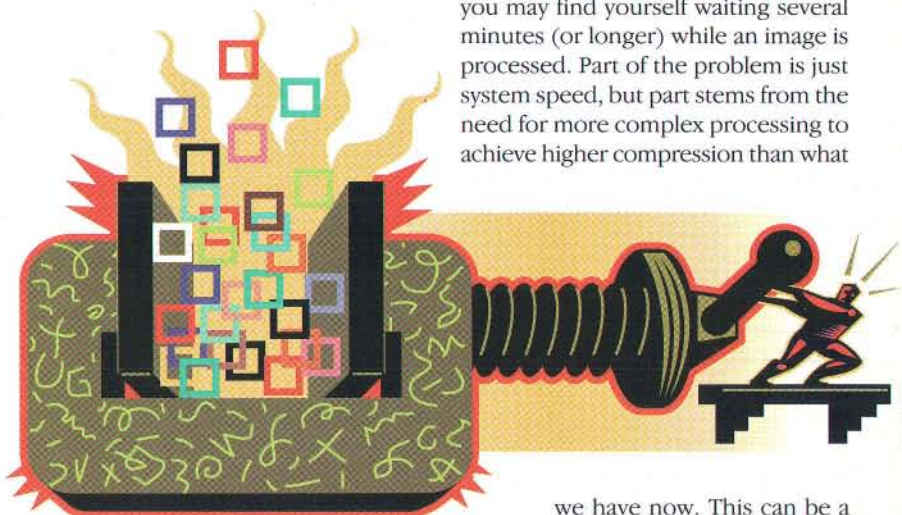
Now try using a Macintosh IIfx with a Spectrum/8 color display board and a large (1024-by-768-pixel) screen. Launch PixelPaint, open a new document, stretch the window to the full screen size, and fill it with some paint color. Save it and look at the file size—over 700K. You can fit just one of these on a regular 800K floppy.

Finally, hook up a Sharp or Howtek 300-dpi color scanner to the Mac IIfx. Try to scan in a full 8½-by-11-inch image at 300 dots per inch and 8 bits per pixel. Chances are you can't do it; you'd need over 8 megabytes of memory just to hold the image. The ratio of this image's size to that of a classic Mac screen shot: 385 to 1.

This color explosion has occurred in less than three years' time. Since the introduction of the Macintosh II in 1987, hardware and software resources have not been able to keep up. And new developments in color imaging—color separation, 3-D solid modeling, animation—continue to push the limits of what's possible.

## Shrink to Fit

Major problems result from the tremendous inflation of image size. You can overcome these limitations in capacity and/or bandwidth to a certain degree by spending lots of money on peripherals, but the return on your investment diminishes quickly. In short, color is expensive.



But that may not always be the case. What if there's a different approach? Instead of spending money on memory, storage devices, and accelerators, what if there were a way to make the large color images smaller?

Several compression utilities are now on the market, and some are available as shareware and public domain software. Typically these programs achieve only 40 percent to 60 percent compression on a given file. That's a start, but reducing an 8MB image to 4MB doesn't solve all your problems. For instance, since these utilities are not integrated within imaging software, you may run out of memory or disk space before you even have a chance to compress the image.

Another issue is that of compression and decompression speed. Since you're dealing with very large images, you may find yourself waiting several minutes (or longer) while an image is processed. Part of the problem is just system speed, but part stems from the need for more complex processing to achieve higher compression than what

we have now. This can be a serious limitation if you need to compress a file on the fly, such as while scanning in an image.

Also, you're often faced with a trade-off between image quality and storage. Some algorithms result in high *(continues)*

STEVE DOWS





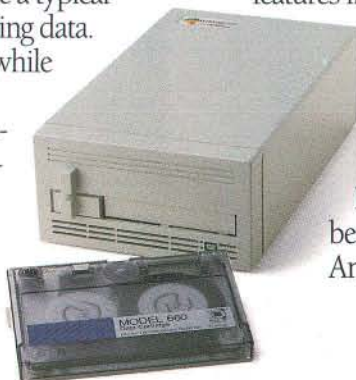
# Never underestimate the importance of a great backup system.

Just how risky is running a hard disk without backup, anyway?

Would you believe almost a half-million dollars? Studies indicate that's how much it could cost to restore a typical 90 megabyte hard disk of business or engineering data. Of course, that doesn't include loss of income while you find another job.

You can avoid the sinking feeling that accompanies data loss by using MaxStream™, the convenient, affordable Macintosh® tape backup system from Maynard.

MaxStream's highly reliable data verification methods guarantee that even if your hard disk takes a dive, your data will have a soft landing.



MaxStream's sizzling speed leaves other tape backup systems in the clouds. And easy-to-use backup and restore features include scripting for automatic, unattended operation storing up to 2.2 gigabytes—a network full of data without intervention. MaxStream even lets you use tapes to transfer data from your IBM PC® to your Macintosh. For product information and a free demo disk call 1-800-237-4929, or write: Maynard Electronics, 460 E. Semoran Blvd., Casselberry, FL 32707.

And make the jump to better backup.

**Maynard Electronics**  
An Archive® Company

Archive is a registered trademark and MaxStream is a trademark of Archive Corporation. Macintosh is a registered trademark of Apple Computer, Inc. IBM PC is a registered trademark of International Business Machines.

Circle 263 on reader service card





Electronics for Imaging uses an image shot by photographer Morton Beebe to demonstrate its compression technology. This original image, 2.1MB in size, was digitized using a slide scanner.



This image shows the result of 22 to 1 compression, which brought the file size down to 0.10MB. Some small artifacts are visible along the top cable of the bridge.



This image shows the result of 39 to 1 compression which reduced the file size to 0.05MB. Notice the artifacts along the cables and top of the towers.

MORTON BEEBE

compression, but with a significant loss of information. When the image is decompressed, gaps, patterns, and other artifacts appear in the image. Repeated compression and decompression can make image quality worse.

Finally, there is the issue of coordination: if I compress an image and

give it to you, will you have the right utility to decompress it? More important, if the scanner-control software compresses the image you are scanning in, can the image-manipulation software that you want to use correctly decompress that image? To achieve this kind of integration, there

needs to be a standard of some sort.

#### **Slouching toward a Standard**

An international committee is trying to do just that. The Joint Photographic Experts Group (JPEG) has created a compression-and-decompression algorithm. *(continues)*

# Imagine Losing Everything In Your Mac.





# The first affordable 800x400 PostScript® laser printer.

Until now, you had a choice: compromise your graphic standards with a 300 x 300 laser, or compromise your finances with a higher resolution printer.

Now there's the NewGen TurboPS/400 with a standard printing resolution of 400 x 400 dpi. That's almost *twice* the resolution of standard 300 dpi printers — at about the same price.

If you need even higher resolution, you can upgrade to 800 x 400 dpi with our resolution upgrade kit. You'll get the resolution you need to print fine-lined graphics and smooth fonts, and save time and money by printing your own masters. And best of all, you can get 800 x 400 resolution at about half the cost of high-priced imagesetters.

No wonder our competition is fading. ***It's faster, too.***

NewGen's dual-processor controller design, utilizing a 20MHz graphics RISC



800 x 400



300 x 300

processor, gives us the fastest PostScript-compatible desktop laser you can buy. In fact, it will print most pages three to five times faster than the Apple LaserWriter® IINTX and blow the doors off anything else in its class.

## ***IBM® and Macintosh® compatibility.***

The TurboPS/300 gives you plug and play Macintosh compatibility — with LaserWriter IINTX compatibility, AppleTalk® interface, Adobe® downloadable font

support and 35 Mac screen/printer fonts.

IBM compatibility includes HP LaserJet II® HPGL and Epson® emulations, and parallel/serial interfaces.

## ***Free test results.***

To get the full story on the high-resolution high-speed TurboPS/400, call NewGen at (714) 641-8900. We'll send you a package including timing test results, print samples, and the lowdown on our other remarkable laser, the TurboPS/300.

We'll also send the name of a NewGen reseller in your area. So you can see for yourself. And believe.



**NewGen Systems Corporation**

17580 Newhope Street  
Fountain Valley, CA 92708  
Telephone (714) 641-8900

NewGen, NewGen Systems Corporation, NewGen logo, TurboPS/300 and TurboPS/400 are trademarks of NewGen Systems Corporation. All other brand product names are trademarks or registered trademarks of their respective companies.

Adobe and PostScript are registered trademarks of Adobe Systems, Inc. NewGen's compatible interpreter is compatible with Adobe PostScript.

**Circle 409 on reader service card**



rithm designed to work with large color images. JPEG's goal is to achieve high compression ratios with minimal degradation by throwing away "unimportant" information in the image.

As defined by JPEG, the algorithm uses three steps to compress an image. First, it divides the image up into 8-by-8-pixel squares and applies a discrete cosine transform (DCT) to each square. Because the DCT is a member of the Fourier transform family, the result is 64 frequency values. Second, these frequencies are put through a quantization algorithm to eliminate unimportant frequencies (based on studies of people's color-perception thresholds). Third, the remaining values are run through a Huffman coding scheme, which uses a predefined table to encode each remaining value as a variable-length string of bits, with the most frequently occurring values using the fewest bits.

Decompression reverses the process. First, the Huffman bit strings are decoded. Next, the quantization algorithm recreates a set of 64 frequen-

cies. Finally, an inverse cosine transform (ICT) is applied, resulting in an 8-by-8-pixel square.

The JPEG algorithm is designed to let users adjust the compression ratio, trading off image quality for greater compression. Thus, you might increase compression if picture quality or integrity were not as important as, say, simple recognition of the general image. Conversely, you could bring down the compression to maintain high image integrity.

JPEG's intent is to establish this algorithm as a standard, not just for computers, but for any application requiring storage, manipulation, or transmission of large color images, such as high-definition TV (HDTV). At least two companies—Electronics for Imaging (EFI) and Creative Circuits Corporation (C<sup>3</sup>)—want to aid JPEG in that effort and earn themselves some money in the process.

#### Software versus Silicon

EFI (415/742-3400) of San Bruno, California, has developed and released

an implementation of the JPEG algorithm in a software library called Ecomp. EFI claims that Ecomp provides a compression ratio of 20 to 1 or better for color images, with only a minor loss of quality on initial compression, and with no additional loss on repeated compression-decompression cycles. That kind of compression lets you fit several large-screen, 32-bit color images (more than 3MB each) onto a single 800K floppy disk.

EFI's results look impressive. There is no visible degradation in the sample image of the Golden Gate Bridge after an 11-to-1 compression, and little degradation after a 22-to-1 compression. Even a 39-to-1 compression-decompression cycle left the image relatively intact, with visual artifacts confined mostly to the portion of the image containing the bridge's support cables.

Unfortunately, speed is not Ecomp's strongest feature, due to the heavy math involved in the process. Compression and decompression pro-  
*(continues)*

# Now, Imagine Getting It Back.

You'll get your data back fast with SUM II.<sup>™</sup> New SUM II recovers crashed hard disks and accidentally thrown away files so effectively, *MacWEEK* magazine calls it "the best set of utilities available for file and disk recovery."<sup>\*</sup>

SUM II protects data, speeds up hard disks, and even includes a complete backup program. It's the

best-selling, highest-rated data protection and recovery program for the Macintosh.<sup>\*\*</sup> Imagine what it can do for you.

Get SUM II today! See your dealer or call (800) 228-4122 Ext. 688G for information.



Symantec Corporation, 10201 Torre Avenue, Cupertino, CA 95014. (408) 253-9600.  
<sup>\*</sup>Steve Costa, *MacWEEK*, 10/3/89. <sup>\*\*</sup>*MacUser* 1989: Editor's Choice, 5 Mice Rating, and Eddy Award for Best Utility. *Macworld's* 1989 Reader's World Class Award. *Publisher's* 1989 Reader's Choice Award. Best seller through National Distributors: Ingram Micro D, Softsel, Kenfil. SUM is a trademark of Symantec Corporation.  
 © 1990 Symantec Corporation

**SYMANTEC.**  
 The #1 Data Protection  
 and Recovery Program





# Macintosh IIci/105 Color System



## **This complete ready-to-run Macintosh IIci system includes:**

- 25 Mhz 68030 processor
- 1.44 Meg FDHD Disk Drive
- Built-in Video Card
- Quantum 105 Meg Hard Drive
- 5 Megs of Memory
- NEC MacSync Hi-Res RGB Monitor w/Tilt & Swivel Stand
- MacPro 105 Extended Keyboard
- Desktop Mouse & Mouse Pad
- HyperCard & MultiFinder Software
- All necessary cables & manuals
- 3.5" high density diskettes (10)

**System Price \$6739 Pkg #9003**

## **180 Day Performance Guarantee**

In addition to CDA's 30 Day Money Back Guarantee, all products are guaranteed for a full **180 days** to be free of defects, or we will repair them at no charge.

**Call!** for weekly specials, pricing updates, our free Macintosh Catalog, and more information on our complete line of Macintosh systems, hardware, software and accessories.

### **Visa, MC, Amex, & Discover accepted.**

CDA is not an authorized Apple dealer. Apple & Macintosh are registered trademarks of Apple Computer Inc. Prices subject to change.

**Hours:** Mon-Fri 9am-10pm, Sat. 9am-5pm, EST  
**Fax#** (201) 832-9740

Ad #28-04

CDA Computer Sales  
1 CDA Plaza, PO Box  
533 Califon, NJ 07830

**CDA**  
computer sales

*Mailorder Exclusively Since 1980*

**US/Canada 800-526-5313**

**Outside US/in NJ 201-832-9004**

**Circle 32 on reader service card.**

ceed at the same rate, processing about 10 kilobytes of decompressed image per second on a Mac II system. That may be bearable if you are working with smaller images (a 3MB image takes about 5 minutes). But that rate works out to about 18 minutes to compress or decompress a 10MB image, a speed I suspect most users would find intolerable and that would limit the use of Ecomp in real-time applications, such as scanning.

C<sup>3</sup> (408/944-6300) of San Jose, California, is trying to eliminate that speed barrier. According to C<sup>3</sup> representatives, the company has not only implemented the JPEG algorithm in software, but also in a custom silicon-chip design that is still in the prototyping stages. Company officials claim that the chip can decompress a 10MB image in 1/3 second, some 3000 times faster than the software implementation. According to C<sup>3</sup>, this rate is achieved by using some 300 levels of pipelining; in other words, the chip steps through 300 operations simultaneously. Furthermore, the chip is designed for parallel processing, allowing a hardware manufacturer to achieve faster compression and decompression rates by using several chips. C<sup>3</sup> says that four of these chips should be able to do real-time (30-frames-per-second) decompression of full-color HDTV images.

If these claims are true, the chip (or something like it) could have significant implications for both computer and general consumer markets. For example, an image processing unit based on this chip could become a standard option or feature for computer systems, much as floating-point units are now, and as digital signal processors are becoming. Such a chip could also find its way into video (and audio) consumer devices, promoting the current shift from analog to digital and removing some of the information barriers between consumer and computer electronics.

### **Will Users Benefit?**

EFI and C<sup>3</sup> are targeting developers with their products by licensing their technology. The cost is a flat, one-time fee. EFI charges a company \$1000 for internal use and \$10,000 for use in products; C<sup>3</sup> charges \$500 and \$15,000,

respectively. In both cases the higher figure allows a firm to use the JPEG algorithm in commercial products, with no per-copy royalties of any kind. The goal is to establish the JPEG algorithm as a software standard before implementing it in hardware.

That goal, however, is not being served by the pricing fees described. The simple truth is that we won't benefit from this or any other compression routine unless it's widely adopted. If EFI and C<sup>3</sup> really want to set a standard, they should write simple compression and decompression utilities for all their target platforms and release them in the public domain, then cut their licensing fees to a half or a third of what they are asking now. The first move would establish a demand for applications that support the compressed image format; the second would allow more small developers to jump on the bandwagon (and would probably result in higher revenues, to boot).

Even with increases in processor speed, though, the JPEG algorithm is just too slow for effective, convenient use. The best solution is hardware; that same algorithm in silicon—an image processing unit like the C<sup>3</sup> chip—needs to be a standard part of every Macintosh system that deals with large color images.

What we need now is strong leadership from Apple, which developed and released 32-bit QuickDraw without providing hardware and software solutions to the resulting bottleneck. Third-party companies are seeking their own answers to the problems of graphic storage, manipulation, and transmission. But those solutions may be incompatible. Apple could serve its customers and itself by making the JPEG algorithm a standard part of system software and, eventually, of system hardware. Until then, high-quality color will remain a burden for most of us. And that load will ultimately weigh down Apple in the fiercely competitive years that lie ahead. **M**

*Contributing editor Bruce F. Webster is project manager at San Diego-based LaserGo. He can be reached via BIX (bwebster) and via MCI Mail (Bruce Webster).*



**NOW THAT THERE'S A TOTALLY NEW DESKTOP PUBLISHING PROGRAM  
WITH AN INTUITIVE USER INTERFACE, THAT ALLOWS FOR THE  
PRODUCTION OF DOCUMENTS UP TO 999 PAGES IN  
LENGTH, WITH TEXT EDITING CAPABILITIES  
THAT MAY ACTUALLY RIVAL YOUR  
WORD PROCESSOR, AS WELL AS  
TYPOGRAPHIC AND LAYOUT  
CONTROL TO SATISFY EVEN  
THE MOST DEMANDING  
DESIGNER, WHERE  
DOES THAT PUT  
PAGEMAKER?**



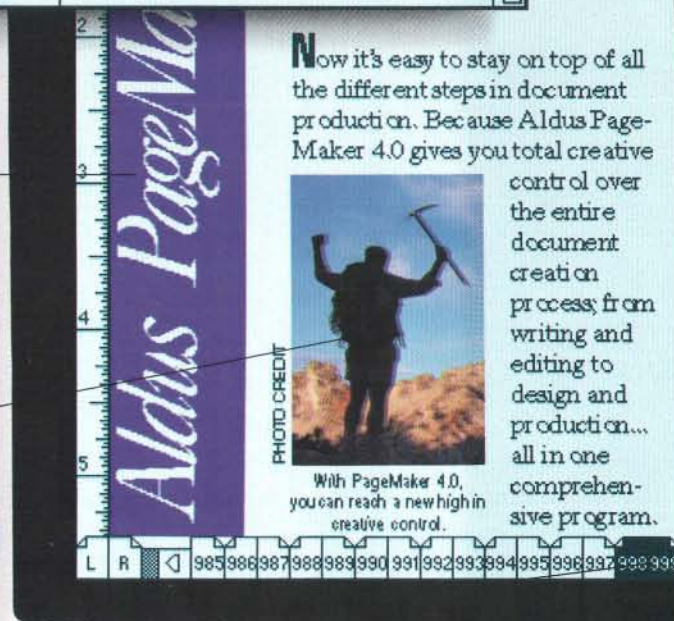
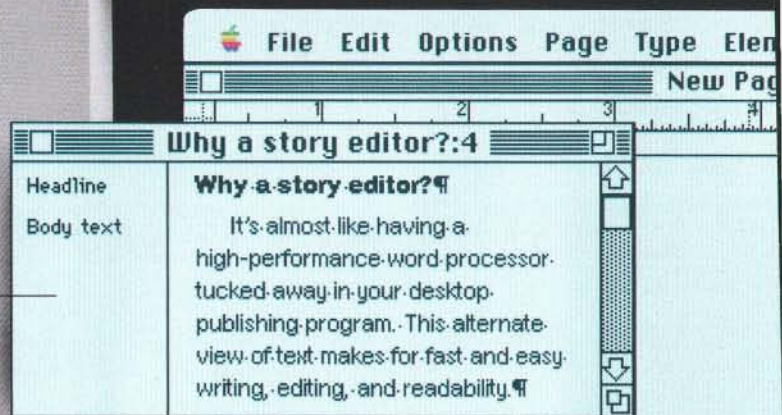
Now there's a Macintosh program that so greatly expands your publishing horizons, it can't be called just an upgrade for Aldus PageMaker.<sup>®</sup> It's an upgrade for all of desktop publishing. Because now you have total control—start to finish—over the entire process: writing, editing, design, and production. For any type of document, any length.

**Write and edit** with an integrated Story Editor™ that includes much of the performance of a stand-alone word processor. This alternate text-only view lets you spell-check, search and replace, change styles—and the layout view is automatically updated.

**Create a look with type** by rotating text in 90° increments, condensing or expanding type from 5% to 250%, force justifying lines to any specified width, or applying point-size-dependent track kerning across any range of text.

**Keep up to date** with the new Links management facility. Now you can automatically update a publication with the most recent versions of text and graphic files.

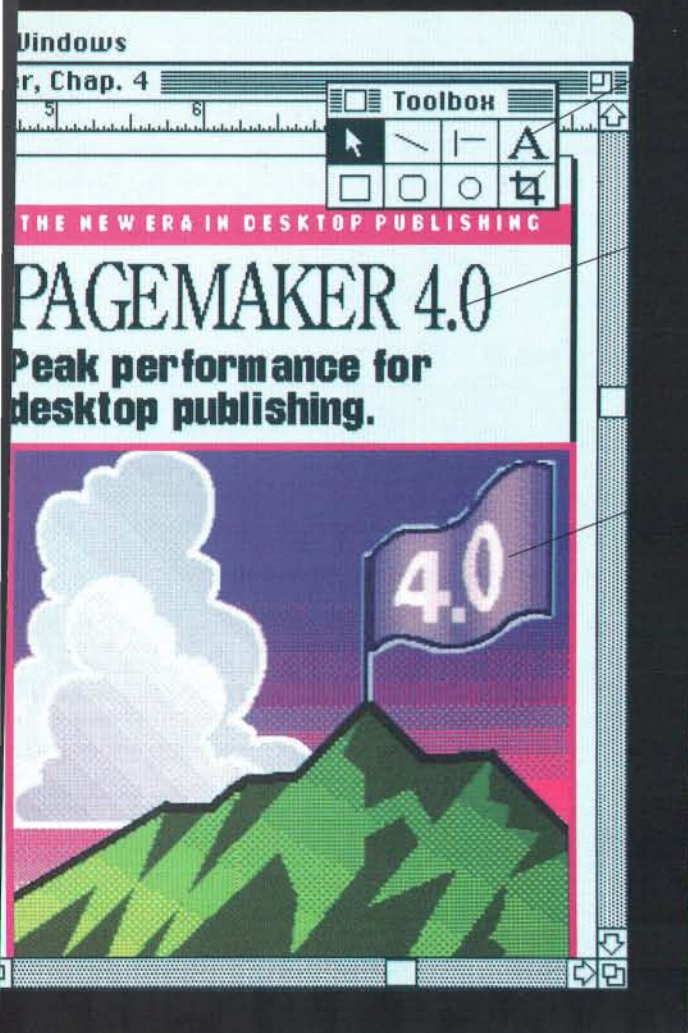
**Build files up to 999 pages,** and beyond. For long publications, combine files using PageMaker 4.0's Book command to create a common table of contents and index, and to chain-print the files.



# ALL BY INTRODUCING THE

\*Pantone, Inc.'s check-standard trademark for color reproduction and color reproduction materials. Aldus, the Aldus logo, and PageMaker are registered trademarks and Aldus PrePrint and Story





The PageMaker toolbox and paste-board, along with 30 pre-designed layout templates, are some of the reasons why learning and using PageMaker is still so quick and easy.

To be precise, PageMaker 4.0's new typographic controls let you kern over any range of text, or for individual pairs to 0.01 of an em. Assign type sizes or leading from 4 to 650 points, in increments of 0.1 of a point.

Add the impact of color with imported TIFF images and EPS illustrations. Choose from PANTONE®, RGB, HLS and CMYK color models. Then create color separations using an OPI-compatible separator such as Aldus PrePrint™ (purchased separately).

For a brochure or the location of your nearest dealer, call 800-333-2538, Department 2L. **Better yet, PageMaker's National Road Show starts in March. Call 800-950-1989 for a schedule and free reservations.** Because the best thing about the new PageMaker is not what it can do now; it's what you can do now.



**ALDUS**®

The Creative Edge  
in Business.

# ITSELF. NEW PAGEMAKER.

Editor are trademarks of Aldus Corp. Macintosh is a registered trademark of Apple Computer Inc. PANTONE® is a registered trademark of Pantone, Inc. ©1990 Aldus Corporation. All rights reserved.



special event

MACWORLD'S *FOURTH ANNUAL*

# TECHNOLOGY and ISSUES CONFERENCE

June 27-29, 1990

SESSIONS WILL INCLUDE:

ADVANCED GRAPHICS

ANIMATION

MULTIMEDIA

END-USER PROGRAMMING

MAC AND LOCAL AREA NETWORKS

MAC AND MAINFRAMES/MINIS

DESKTOP PUBLISHING

SYSTEM SOFTWARE

MACINTOSH HARDWARE

The Technology and Issues Conference brings together third-party Macintosh hardware and software developers for a series of informal sessions to discuss the latest issues concerning the Mac community.

The setting for this year's conference is Marriott's Tenaya Lodge, situated at the southern border of Yosemite National Park. Sessions will begin on June 27 and run through June 29, 1990.



To register to attend the  
**Macworld Technology and Issues  
Conference**, fill in the coupon and attach it to  
your check. Mail to: Technology and Issues  
Conference, *Macworld* Editorial, 501 2nd St.,  
San Francisco, CA 94107. Registration  
is \$695; a \$100 discount applies  
if you register before April 1.

NAME . . . . . TITLE . . . . .

COMPANY . . . . .

ADDRESS . . . . .

CITY . . . . . STATE . . . . . ZIP . . . . .

PHONE . . . . .

☐ Please send me more detailed information about the Technology and  
Issues Conference.



# "When you order SIMMs from XeTel, you get top quality memory at below market prices."



## Highest Quality

XeTel is a world leader in surface mount technology, supplying millions of memory modules to Fortune 500 computer manufacturers. Now, you can get the exact same quality memory direct from XeTel at below market prices.

## Lowest Prices

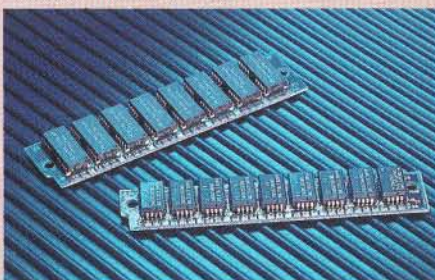
How can we sell for less? We purchase chips direct from the manufacturers and make modules here at our state-of-the-art facility. And, by selling direct to you, we've eliminated mark-ups by middlemen and resellers.

## Factory Tested For Performance

XeTel's memory modules meet the same specs as the components in your MAC. In fact, the mechanical specs of our memory modules meet

JEDEC standards accepted by the industry.

To ensure maximum performance, each module undergoes 24 hour temperature cycling and extensive



electrical testing at XeTel before it's ever shipped to you.

We also ship each module in a 3M static shielding bag to prevent static damage while in transit and include a static control wrist strap for you to use during installation.



## Factory Backed Unlimited Lifetime Warranty

We don't just say our memory modules are superior, we prove it! If for any reason your module should malfunction, XeTel will replace it FREE. You pay only for shipping. Each shipment includes proper installation instructions. If further assistance is needed, our engineering staff is available to answer any questions.



8100 Cameron Road  
Austin, TX 78753

Call 5 a.m. until Midnight M-F CT

**1-800-388-7466 (Ext.12)**

Call for quantity discounts!  
VISA / Mastercard / COD  
All orders shipped next day.

## More MAC Memory For Less.

SIMMs in 70, 80 and 100 ns speed.

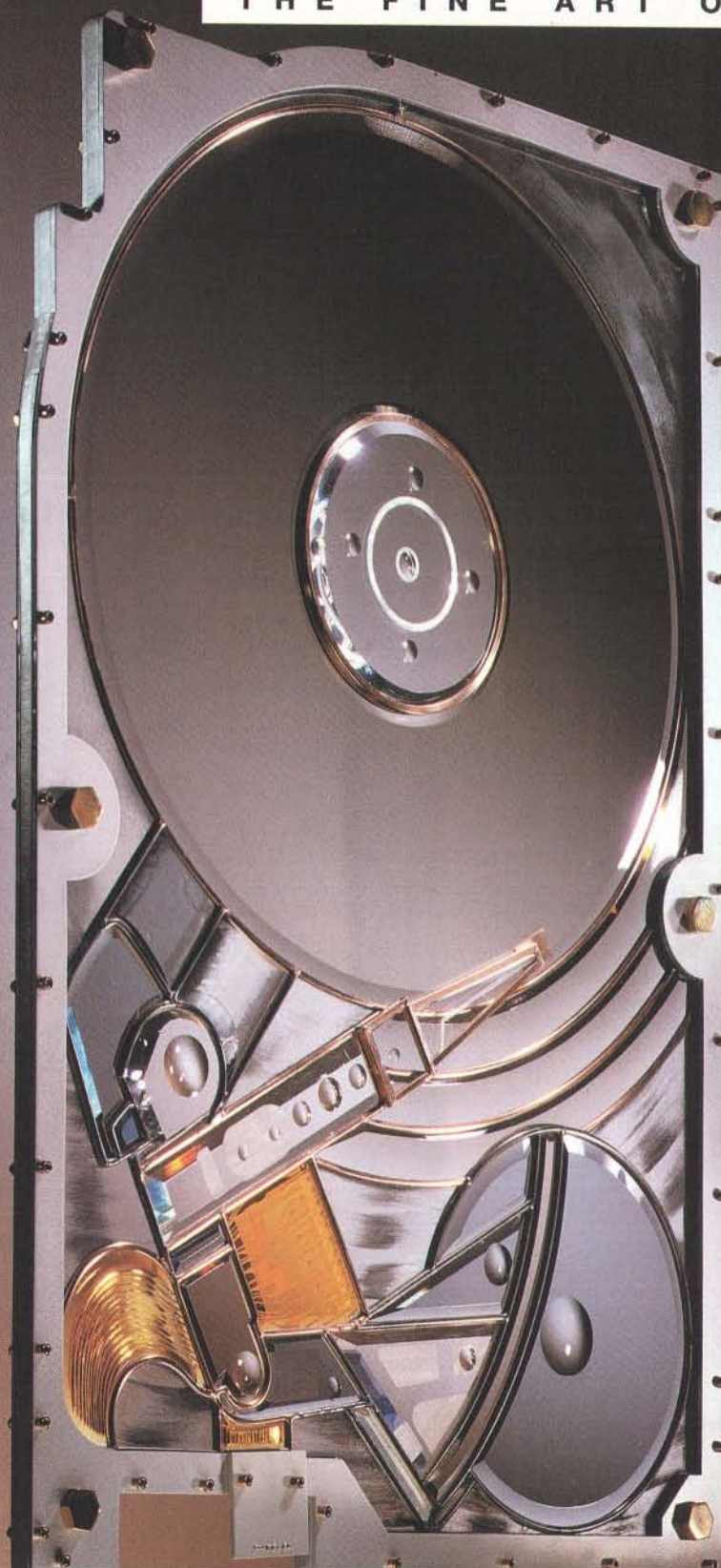
SIMMs	Their Price	Our Price
256K x 8 (100 ns)	NA	\$ 35.00
256K x 9 (70 ns) Memory Masters	\$ 59.00*	\$ 50.00
1M x 8 (80 ns) Memory Masters	\$ 99.00*	\$ 90.00
1M x 9 (80 ns) Microprocessors	\$110.00*	\$ 99.00

SIMMs (continued)	Their Price	Our Price
4M x 8 High Profile .950 inches	NA	\$ 700.00
4M x 9 High Profile .950 inches	NA	\$ 750.00
4M x 8 Low Profile .800 inches	NA	\$1000.00
4M x 9 Low Profile .800 inches	NA	\$1100.00

\*Published prices in Computer Shopper 2/90



THE FINE ART OF DISC DRIVE



Beveled Glass Window by  
Thomas Tisch & Andreas Lehmann  
Oakland, California

**E**ven to the experienced observer, a disc drive is a

technological marvel. With discs spinning at 60 revolutions per second, the mechanics involved are astounding. It takes a company with a unique level of skill and experience to produce drives in volume that perform reliably year after year. A company like Seagate.

Our 3.5" ST1096 family is a great example of Seagate craftsmanship. Featuring a choice of 42, 60 or 83 formatted megabytes, these high performance (24 msec average access time) drives are ready for demanding PC and Apple® applications. The family offers ST412/MFM and SCSI interfaces for application flexibility. And they all feature a 50,000 hour mean-time-between-failure rate.

Like the artist who spends years perfecting his craft, Seagate has spent the past decade mastering the fine art of disc drives. For more information on our multi-faceted product line, contact your authorized Seagate distributor, or call Seagate directly at 800-468-DISC, or 408-438-6550.

 **Seagate**

Apple is a registered trademark of Apple Computer, Inc.  
Seagate and the Seagate logo are registered trademarks of Seagate Technology, Inc.  
© 1989 Seagate Technology, Inc.





# MACWORLD NEWS

by Dan Littman and  
Tom Moran

## Moonraker: Not for Your Eyes Only



Workstation Technologies' Moonraker Video Digitizer is the first real-time, color video digitizer for the Mac II series. It can capture an analog video signal in a variety of broadcast formats and convert it into digital information for manipulation by the computer.

The Moonraker, which consists of one full-size NuBus board, accepts input from any PAL or NTSC video source. In NTSC mode, it offers a resolution of 645 by 484 pixels; when the board's software is set for PAL, its resolution is 768 by 512. The digitizer can create 8-bit color or gray-scale digitized images, 16-bit color images, or 32-bit color images. Its speed varies from 2½ frames per second in 32-bit mode, to 30 frames per second in 8-bit mode for NTSC, and 25 frames per second for PAL in 8-bit mode.

Two RGB inputs, one composite-video input, and one Super VHS input are incorporated in the board. You can attach both a video camera and a videodisc player and do fades and dissolves with the two inputs.

The board also supports scaling and masking of the digitized image. A sophisticated color-mapping technique allows the user to change all pixels of one color to another color, among other functions.

The Moonraker will not be available directly from Workstation Technologies, but will be resold by third-party vendors. For more information on products incorporating the Moonraker digitizer, call the company in Irvine, California, at 714/250-8969.

—Tom Moran



DAVID B. MOORE

With video camera attached, the Moonraker Video Digitizer captures our photographer on screen in real-time, full-motion video.

## HyperCard to Translate Medical Babble



Lexical Technology didn't set out to construct the world's largest known HyperCard application, but the company's MetaCard, a comprehensive cross-reference of thousands of phrases from the leading biomedical indexes, has achieved that distinction: it packs more than 106,000 cards into 109 stacks that consume 136MB of disk space. MetaCard is the browser interface to the Metathesaurus, the first milestone of the National Library of Medicine's (NLM) ten-year Unified Medical Language System

(UMLS) project. The UMLS project is a federal initiative to facilitate retrieval and integration of information from machine-readable sources including journal articles, clinical records, databases such as organ-donor registries, and medical knowledge-bases.

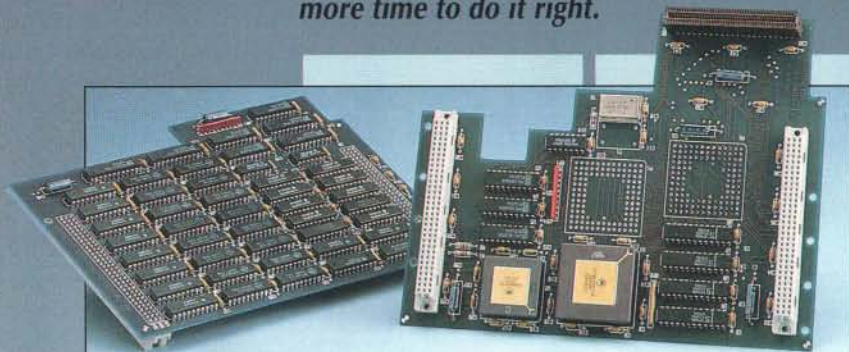
One of MetaCard's primary functions will be to allow physicians to compose natural language queries to the Medline online database. Up to now, Medline searching has suffered from a lack of standard terminology among the indexing systems. For instance, to a physician *atherosclerotic heart disease* and *coronary artery disease* mean virtually the same thing, (continues)



# DAYSTAR PRODUCTS...

## SPEED, POWER & EXPANDABILITY

DayStar provides Macintosh® professionals with speed to go beyond the ordinary. Whether its graphics, database, accounting or connectivity, our products make projects flow smoother with more time to do it right.



### Accelerator II, IIx and IIcx™

DayStar Accelerators put the speed of leading-edge technology into the Macintosh II, IIx and IIcx. They create a professional platform that delivers real gains in productivity. Even the most complicated graphics begin to flow smoothly from one command to the next. Providing time to create more powerful results. Available in 25, 33, 40 and 50 MHz configurations for the Macintosh II, IIx and IIcx.

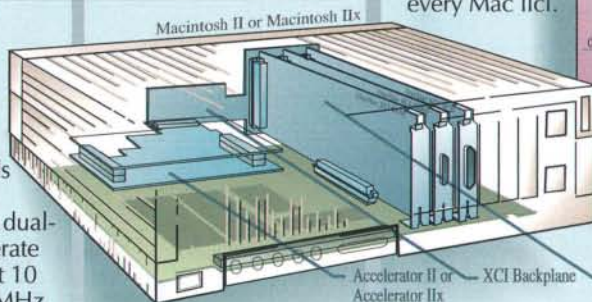
DayStar Accelerators enable professionals to get more done in less time

The LT200 enables IBM PS/2 owner's to use LocalTalk printers or access Tops® and AppleShare®



### System XCI™

Break the NuBus performance barrier. DayStar's XCI backplane connects XCI cards to every DayStar Accelerator. These dual-ported boards operate through NuBus® at 10 MHz or up to 50 MHz via the XCI backplane. XCI equipped professionals can incorporate superfast RAM, SCSI and 24 bit Video into NuBus slots.



### LT200™ LocalTalk Interface Boards...

The transparent PC to LocalTalk connection. DayStar's LT200 lets users connect IBM® PC, XT, AT, PS/2 Micro Channel or compatibles to LocalTalk™ networks.

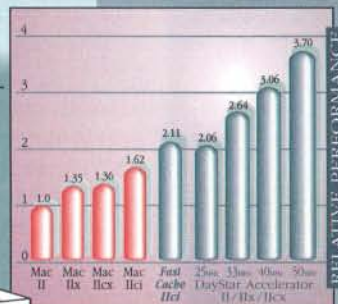


### Fast Cache IIci™

The high-performance cache card for Apple's new Mac IIci.

This powerful new cache memory board plugs directly into the Mac IIci's cache connector. Fast Cache IIci boosts processing speed up to 40% by caching the 68030 processor at zero wait-states. That's why Apple® builds a cache connector into every Mac IIci.

Fast Cache IIci increases Mac IIci processing speed up to 40%



DayStar offers a complete line of performance oriented products

Toll-free technical support puts us just a phone call away.

DayStar products are supported by a one year limited warranty.

We stand behind our products with cost effective upgrades that guarantee access to the latest technology.

System XCI is the absolute maximum in Macintosh performance

Call 1-800-962-2077 today for more information and the name of your nearest Authorized DayStar Dealer.



# DAYSTAR

D I G I T A L

Available exclusively through dealers and value added resellers

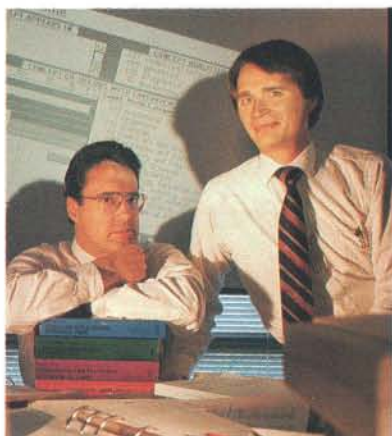
5556 Atlanta Highway, Flowery Branch, GA 30542, (404) 967-2077

Other brands and product names are trademarks or registered trademarks of their respective holders. Product specifications are subject to change without notice. ©1989 DayStar Digital, Inc.

Dealers circle 404 on reader service card

End Users circle 477 on reader service card





David Sheretz (left) and Mark Tuttle of Lexical Technology.

but to a computer searching a database by word-matching, there is no overlap. MetaCard creates thousands of conceptual links between such linguistically disparate terms.

MetaCard owes its capabilities to two unique features: a powerful lexical-matching algorithm that automates the cross-referencing process, and a lightning-fast search routine that bypasses HyperCard's cumbersome Find command.

MetaCard will eventually be pressed on CD ROM and updated periodically as medical terminology evolves. It will revolutionize the use of multilayered information systems of telecommunications, databases, and decision-support systems. Physicians will use it for consulting with online expert systems such as AMANet's DXplain, and at hospitals and insurance companies it will access patient records to automate billing. The MetaCard technology can be generalized to any field that uses a vast lexicon of technical terms, such as law, engineering, or insurance underwriting.

For more information contact Lexical Technology in Alameda, California, at 415/865-8500.

—Beverly Kane, M.D.

## The Parallax Mac



The 1990 Time Table of Science and Innovation from Xiphias is a CD ROM for the Mac that provides simultaneous glimpses along three time lines: past, present, and future. You view the past

through a variety of multimedia tools that show the dawn of human innovation and let you see what theorists think was hot in recent prehistory.

The disk is organized to provide hypertext linking of related topics by keywords, and each word in a report is hot-linked to the disk's search engine. Choosing the word *China*, for example, produces a list of all stories on the disk about Chinese technology and scientific discovery.

In addition to displaying text, however, the 1990 Time Table of Science and Innovation provides a number of features that further enhance the learning and the fun. Video sequences, composed of digitized video frames that are displayed at a rate of two per second, provide moving pictures of important events. One sequence, for example, shows animations of the space shuttle and of a moon landing. Still graphics, including shots of artwork from major museums and private contributors, also enhance the reports.

An Atlas button brings up maps that show where particular important events occurred. A Zoom button shows the distance from the earth of

ticular event; and a Bibliography button gives citations of sources for each of the more than 6000 stories in the Time Table. Also, you can navigate by selecting specific titles or keywords, by selecting a range of calendar years to search for innovations, or by activating Time Cycles which tie technological innovation to economic cycles.

The 1990 Time Table of Science and Innovation was scheduled to ship in January. Its suggested retail price is \$185, although registered owners of the 1989 version may upgrade for no charge. For more information, call Xiphias in Los Angeles, California, at 213/841-2790.

—Mark Brownstein

## The Evolution of Animate Objects

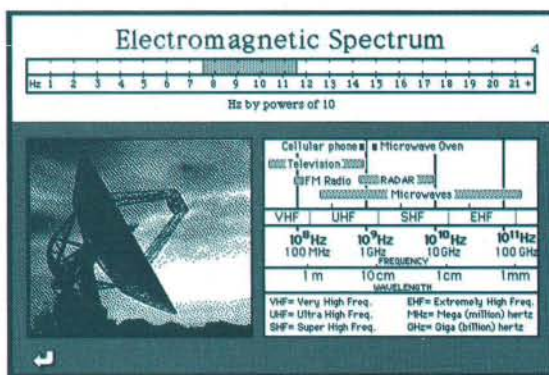


MacroMind's two new products, Director 2.0 and Three-D, boost Macintosh animation another step up the ladder.

Director's Score environment—in which you line up actors, sounds, and other animation parts—will add a channel for scripts written in its new object-oriented language, Lingo, so that Director 2.0 animations can react to input from people or other sources. When people respond to prompts or click on buttons, Lingo scripts will be able to interpret the input and change an animation to match. Lingo can also create windows, menus, and other Mac

interface objects. It provides a wide range of functions, constants, operators, and properties, but as in HyperCard, basic scripting will be accessible to anyone.

MacroMind Three-D is not a 3-D modeling package. It is designed for importing 3-D objects from other packages (including Swivel 3D, Super 3D, MiniCAD, Design Dimensions, and DXF and IGES files) and preparing the objects for use in Director. Three-D can render images or export them to (continues)



A screen from the 1990 Time Table of Science and Innovation shows the electromagnetic spectrum.

an aerospace event or space discovery by having you visually lift off from the earth and rise to view the planet from the appropriate altitude.

A Frequency button shows the electromagnetic frequency at which types of energy occur; a Geochronology Timeline button shows the evolution of life on earth; a First Person button displays a text field with a witness's first-person account of a par-



# "Optical-ability"

Pinnacle Micro is the world's leader in removable, erasable, optical storage systems.

The expanding line of Pinnacle drives offers real solutions to mass storage problems and a whole new set of data handling capabilities.

## *Removable, Erasable, Opticalabilities.*

### *Access-archivability.*

Access your archives quickly and easily. Why wade through stacks of floppies or miles of tape to find a single file?

### *Platform-compatibility.*

Interface kits are available for Macintosh, Sun, DEC, HP, IBM-XT, AT, PS/2 and compatibles, plus advanced applications such as Unix, A/UX, Xenix and Novell NetWare.

### *Infinite-storability.*

Store huge files-CAD/CAM, multi-media, pre-press, 32-bit color. Each cartridge holds up to 650 megabytes. If one isn't enough, add another.

### *Data-securability.*

Carry your world wherever you go. Put your operating system, applications, and data files on a single cartridge. Keep your data safe and secure or move it from place to place.

Interface kits available for MAC, SUN, DEC, HP, IBM A/T, X/T, PS/2 and compatibles from \$495.

### *Upscale-ability.*

Start with a single or dual-disk system for your network today. Move up to a 25 disk, 16 gigabyte system tomorrow. Your cartridges and your data will easily move up with you.

### *Crash-avoidability.*

Eliminate crash anxiety, with laser technology there are no heads to crash. If your hard drive goes down your optical system will put you back on-line immediately.

### *Mass-movability.*

Distribute massive amounts of data in limited quantities. CD-ROM's are great, but not if you need a reduced amount.

### *Problem-solvability.*

Learn how to put these and other opticalabilities to work for you, call today for the name of your nearest authorized dealer.

 (800) 553-7070



Trademark Owners: REO-650, REO-1300 and Pinnacle Micro of Pinnacle Micro, Inc. Sun of Sun Microsystems. HP of Hewlett Packard. A/T, Xenix, IBM, PS/2 of International Business Machines Corporation, Network of Novell. Macintosh of Apple Computer, Inc.

**PINNACLE MICRO**

15265 Alton Parkway • Irvine, CA 92718 • In CA (714) 727-3300 • FAX (714) 727-1913

THE ERASABLE OPTICAL STORAGE COMPANY™

Circle 287 on reader service card





A Director 2.0 animation with buttons and open Score window.

renderers such as Pixar and Silicon Graphics machines. MacroMind describes Three-D as a key parameter system, as opposed to the key framing system used by many 3-D packages, because you can edit all parameters—for example, color changes and  $x$ ,  $y$ , and  $z$ -movement—individually, rather than having to set up and take snapshots of a series of frames.

Three-D will also be able to send rendered animations frame-by-frame to video recorders such as the Diaquest, ARTI, and Lyon-Lamb devices; and using drivers written as Lingo XObjects (similar to HyperCard XCMDs), Director and Three-D will be able to call other devices as well.

Pricing had not been established for either product at press time. For more information, contact MacroMind in San Francisco at 415/442-0200.

—Dan Littman

## Making a Higher Resolution



LaserMax Systems, maker of high-resolution laser printers and controllers, has announced a technology that allows the company's printers to achieve 1000-by-1000-dpi resolution. Called TurboRes, the technique can also increase the vertical resolution of other laser printers based on Canon's popular CX or SX engines.

Previously this was thought impossible because both the rate at which the imaging laser draws lines across the page and the speed at which the paper goes through the laser printer are set. However, LaserMax has applied for a patent on a method to selectively increase the height of the dots drawn by the laser on the imaging drum. Because this means that the printer can draw very smooth curves, the effective vertical resolution of the output is increased to 1000 dpi, according to the com-

pany. Before it developed TurboRes, LaserMax had already been producing printers and controllers with 1000-dpi horizontal resolution by doubling the RAM of the printer and increasing the speed with which the laser turns on and off as it marks individual dots. This method results in narrower dots and more of them in the same space.

The resolution that TurboRes adds to various LaserMax printer controllers depends in part on the amount of



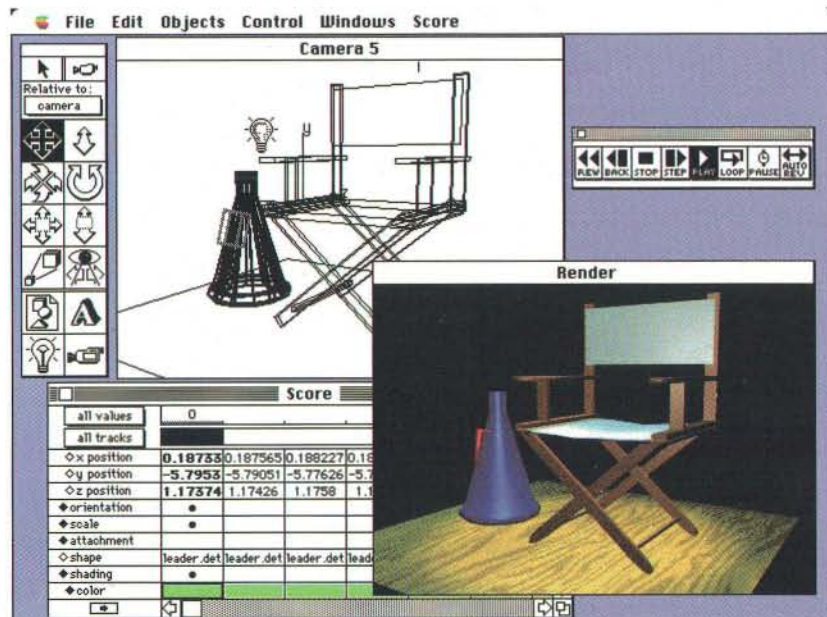
The LaserMax 1000 laser printer controller provides up to 1000-by-1000-dpi output.

RAM the controllers include. With a \$100 software upgrade to TurboRes, LaserMax's MX6/4, MX6/6, and LaserMax 1000 controllers all increase their resolutions; the 4MB MX6/4 to 600 by 600 dpi, the 6MB MX6/6 to 800 by 800, and the 6MB LaserMax 1000 to the full 1000-by-1000-dpi resolution.

The upgrade—which will be free to those who bought the products after November 10, 1989—applies to printers that currently have MX6/4, MX6/6, or LaserMax 1000 controllers. All those controllers shipped after December 15, 1989, will include the new TurboRes capability. The upgrade was slated to be available in January.

The LaserMax 1000 printer has a suggested retail price of \$7995, which includes the controller and software. The printer's controller requires one NuBus slot. For more information, call LaserMax Systems in Eden Prairie, Minnesota, at 612/944-9085.—T.M.

(continues)



In MacroMind Three-D you can assign values to all of an object's attributes, including position and path, and then render the image.



# FONT-LOOSE

*& fancy-free*

Bauhaus Heavy ITC Kabel Ultra Futura Extra Black  
 Chen Revue Franklin Gothic Condensed Bodoni Poster  
 as Medium MACHINE Folio Extra Bold ITC Kabel Bold  
 Bookman Light Linotype Centennial Belwe Bold  
 elsior Galliard Roman Melior Italic Serifa 75 Black  
 iat Eurostile Oblique Stone Sans Dom Casual Fraktur  
 Kabel Helvetica Condensed Eras Light  
 enir Futura Light Bauhaus Sonata  
 Memphis Univers 47 Serifa Sonata  
 f Chancery University Optima  
 iGNOT Light

Visit us at Macworld Exposition  
 Moscone Center, San Francisco  
 Booth 2137

What good are all those Fonts and Desk Accessories if using them is a hassle? Suitcase II sets you free!

Suitcase II is the award-winning software that gives you unlimited access to *all* your fonts and desk accessories, all the time. Without having to use Font/DA Mover to install and deinstall them. Without cluttering up your system file. Without anything to stand between you and your creativity.

Imagine being able to view an unlimited number of fonts *in their own typefaces* at any moment, picking and choosing among them without breaking stride. Imagine never having to search through a cluttered System File to find what you need.

Imagine never having to deal with font ID conflicts, never having to restart your system to install a Desk Accessory you need. Imagine spending your time *creating* instead of juggling fonts and DAs.

Imagine Suitcase II on *your* Macintosh...

## FIFTH GENERATION SYSTEMS

10049 N. Reiger Road Baton Rouge, LA 70809 (504) 291-7221

Circle 364 on reader service card







## Reality Built for Two



In 1970 computer-science professor Myron Krueger sat before a video monitor at the University of Wisconsin watching two hands moving. One hand was his own and the other belonged to his colleague, who was observing the same live video at a screen a mile away. Cameras trained on each man's hand fed video into a single computer, which then composited the input into the one image appearing on both screens. Krueger noticed that when their on-screen hands nearly touched, his colleague pulled away—maintaining masculine propriety even in this artificial reality. Krueger chased his shy colleague's hand all around the screen: "We were already a mile apart," he says, "but he still couldn't get away fast enough."

Krueger has experimented with artificial reality since the 1960s. Since 1974, he has pursued his ideas in an ever-evolving piece called Videoplace, an installation at the Connecticut Museum of Natural History in Storrs, Connecticut. Videoplace visitors in separate rooms can fingerprint together, perform free-fall gymnastics, tickle each other, and have all sorts of fun. The computer combines and alters input from separate cameras trained on each person, who responds in turn to the computer's output, playing games in the worlds Krueger's software creates.

It sounds like science fiction, but Apple's Human Interface Group is interested. Joy Mountford, the group's manager, has loaned Krueger a Mac to integrate into Videoplace's custom hardware and software setup. Krueger plans to apply his "gestural interface"



One person turning cartwheels and another toying with string find their realities combined in Videoplace.

to Mac applications, and to use the Mac's graphics power to improve Videoplace. He thinks someday we'll set aside our mice and put both hands right into the Mac's screen to select with a gesture or draw with our fingers. Krueger envisions human interfaces that we use unawares. In Videoplace, there is nothing to hold or manipulate. You can stand, walk around, and use your whole body, not just your brain and your fingers. As Mountford says, "[Krueger is] pushing intuitive computing beyond the mere graphical interface and into the realm of human gesture, drama, and personality." Imagine thinking, writing, drawing, or designing as fully human, mind-body activities, instead of somatic enslavement to mind and machine.

Krueger's seminal theoretical work, *Artificial Reality* (Addison-Wesley, 1983), will be reissued this summer. For more information, contact Krueger at Artificial Reality, P.O. Box 786, Vernon, Connecticut 06066.

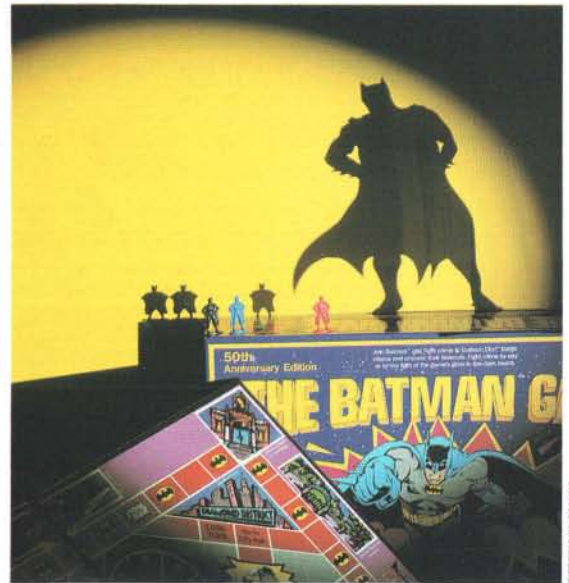
—Ann Garrison

## Holy 128K, Batman!



If you think you need a fully loaded, top-of-the-line Mac in order for your business venture to succeed, you might want to think again. At least one company, University Games, of Menlo Park, California, managed to make a success story with nary a Mac II or color monitor in sight. Cris Lehman and Bob Moog of University Games ventured into the board-game market mixing their own brand of strategy and whimsy on no more than an IBM portable, an ImageWriter, and a Mac 128K.

Business has been brisk since the company's inception in 1983, with annual revenues now above the \$5 million mark. Although the computers used have grown too, they still reflect the company's humble beginnings.



PIERRE-YVES GOAEC

A part of *The Batman Game* board, designed by University Games on a low-end Mac.

The original 128K is still crunching away, although it's been upgraded to a 512KE with a 20MB hard disk. The company also added a Mac Plus with a 45MB drive and a LaserWriter. The Macs share the LaserWriter with a few IBM PCs via TOPS.

University Games has used the Macs primarily to design instructions and game cards for about twenty games the company has created. The Macs helped in producing the company catalog and in making sketches of game boards during brainstorming sessions. Last year, with the help of MacDraw II, the company designed the entire prototype for the board used in *The Batman Game*, which has sold more than 350,000 copies.

Batman is the first game for which the company created the final playing board on the Mac. David Andrews, who designed much of the board, said the only drawback was in sizing the pages. He found it difficult to scale the pages so they would correspond with the exact size needed for the board. Hence, there was a lot of cutting and pasting during development.

University Games—the originator of the Murder Mystery Party games—has just come out with a game called *Pop Opinion*, and has about eight to ten other projects in the works. With the help of Aldus FreeHand, Page-  
(continues)



# Preferred by nine out of ten accountants and manipulators

Consistently, people who work with numbers have some noticeable traits.

They're intelligent, organized and thorough—buttoned up, if you will.

Which explains why Microsoft® Excel has been the spreadsheet standard for Macintosh® ever since it was introduced in 1985. Today, 90% of Macintosh spreadsheet users do their calculating, manipulating, analyzing and presenting with it.

And while Microsoft Excel has always been easy to learn and use, it can now perform

all the complex functions you perform, but with labor-saving benefits.

You can easily build complex models, and conveniently link multiple sheets with a simple point and click.



So the left hand knows what the right is doing, we've added a feature that will tie your data into Microsoft Word documents. Then update that same data automatically, when

*With Microsoft Excel you can create impressive documents, choosing from 256 fonts and colors, variable row height and shading.*

## Profitability by division

## WinMark Copiers

### WxC 2000

		JUL	AUG	SEP	OCT	NOV	DEC
<b>Revenue</b> (In Thousands)	Actual	\$8,400	\$12,300	\$13,900	\$8,700	\$13,000	\$21,300
	Forecast	\$6,453	\$8,800	\$10,050	\$9,460	\$12,000	\$18,900
	Variance	\$1,947	\$3,500	\$3,850	(\$760)	\$1,000	\$2,400
	%	130%	140%	138%	92%	108%	113%
<b>Cost of Goods Sold</b>	Actual	\$1,848	\$3,198	\$3,475	\$2,262	\$2,860	\$7,663
	Forecast	\$1,549	\$2,288	\$2,312	\$1,608	\$2,640	\$3,969
	Variance	\$299	\$910	\$1,164	\$654	\$220	(\$3,969)
	%	119%	140%	150%	141%	108%	0%
<b>Gross Profit</b>		<b>\$6,552</b>	<b>\$9,102</b>	<b>\$10,425</b>	<b>\$6,438</b>	<b>\$10,140</b>	<b>\$21,300</b>

### WxC 1000

		JUL	AUG	SEP	OCT	NOV	DEC
<b>Revenue</b> (In Thousands)	Actual	\$2,184	\$3,198	\$3,892	\$2,610	\$4,030	\$5,325
	Forecast	\$1,613	\$2,200	\$2,513	\$2,365	\$3,000	\$4,725
	Variance	\$571	\$998	\$1,380	\$245	\$1,030	\$600
	%	135%	145%	155%	110%	134%	118%



# ut of ten calculating lative people.

it's been changed in Microsoft Excel.

To insure data integrity, we've even built in alerts that will warn you of such grievous errors as circular references. In fact, Microsoft Excel is so bright, it will actually review your worksheet and flag any formulas that don't fit an established pattern.

Furthermore, the search and replace function can make corrections on a global scale. And customized number formatting lets you bend the rules, allowing you to create everything from a 3-digit account code to a 17-digit part number.

Now, we've left a lot out in this short discourse, but Microsoft Excel hasn't. So be sure to ask your dealer for a complete explanation of its capabilities. And you'll see how Microsoft Excel will make your job easier and better.

Or, if you look at it a different way, you'll become a more effective manipulator. And a more efficient calculator.

**Microsoft**  
Making it all make sense

*Then you can Paste Link those worksheets and charts into your Microsoft Word documents and update them automatically.*

## MEMO:

**TO:** Shannon Pitts

**FR:** Peter Cohen

**DT:** November 13th, 1989

**RE:** Presentation to the Board

In preparation for the annual meeting, I've created a 20-minute slide presentation on our successful entry into the small printer market.

The presentation will explain to the shareholders that, on a basis of sound marketing strategy, reinforced with our knowledge of the printer business at other levels, we have been able to grow from a 2 percent share of market, to 9 percent in 18 short months.

To the right is an excerpt of the presentation which illustrates our growth. Anticipated concerns will probably center around quality of service and the ability to meet market demand over the next year.

We should be able to squelch any fears by explaining that our small printers have a very low (4%) field repair call requirement at present.

And our assembly resources here in the

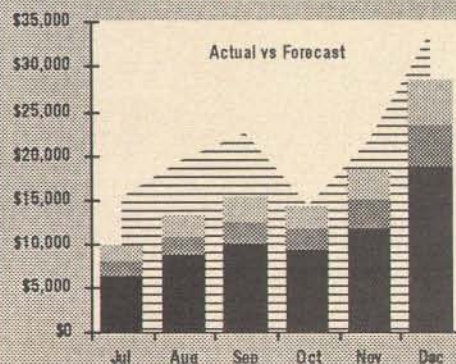
## WinMark Copiers

### WxC 2000

	JUL	AUG	SEP
<b>Revenue</b> (In Thousands)			
Actual	\$8,400	\$12,300	\$13,900
Forecast	\$6,453	\$8,800	\$10,050
Variance	\$1,947	\$3,500	\$3,850
%	130%	140%	138%

With a very respectable 9 percent share after only 18 months, we feel we can reach 15 percent by the end of the next fiscal year (see six month projection).

### FY90 REVENUE





# New Forms of Business.

Paperwork. The essential inconvenience.

Whether it's invoices, travel expenses, office memos or tax returns, Informed™ software and Macintosh® computers can help you change mountains of paperwork into well-organized forms of information.

It's a new way to draw, fill out and manage forms.

**Design and Draw.** Informed Designer™ comes packed with high performance drawing features. All to help you draw crisp, professional looking forms in no time at all.

Grids, guides, rulers, tables, fields, combs, lines, ovals, rectangles, arcs, polygons, type — plus a whole lot more. With over 1/1000<sup>th</sup> of an inch accuracy.

Draw or scan.

Make revisions in minutes. No more obsolete forms.

No. 6 7 - 1 3 - 2 9 4

Draw combed fields or sophisticated tables as easy as drawing a box.

**Fill Out.** With Informed Manager™ filling out forms becomes an effortless, error free task.

Add intelligence to your forms so they can think for themselves. Eliminate repetitive typing with powerful calculations, choices and automatic lookups. Create customized on-line help to answer common questions.

Just imagine the results. Assured accuracy on picture perfect forms.

**Store, Sort, Search, Retrieve.** Since Informed Manager is actually a database, you can organize and manipulate forms like never before. Search and sort at blinding speeds. Print single forms or group them for batch printing.

And because forms are stored electronically, you print less. The bottom line is less paper, less cost.

So it's time to think about forms the new way. Just give us a call. We'd be happy to tell you more.

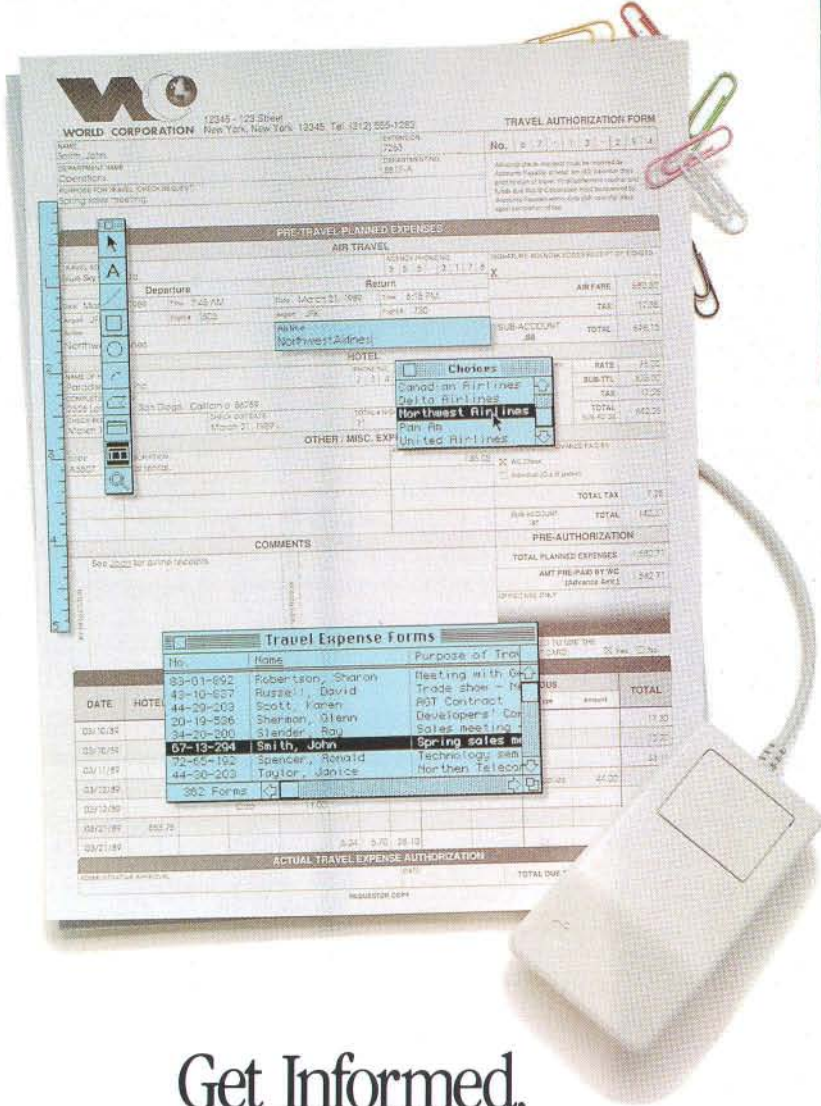
Then form your own conclusion.



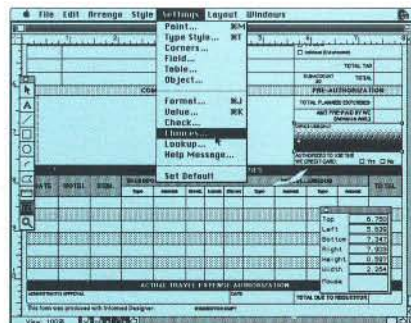
For more information, please call or write:

**Shana Corporation**  
Advanced Technology Center  
105, 9650 - 20 Avenue  
Edmonton, Alberta Canada T6N 1G1

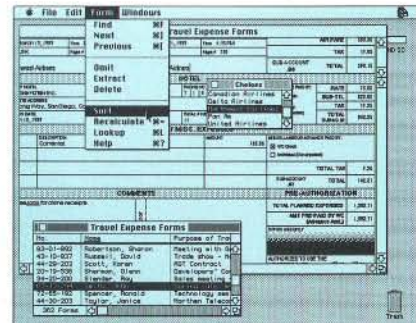
Tel. (403) 463 - 3330 FAX (403) 428 - 5376  
AppleLink CDA0004 MacNet SHANA



## Get Informed.



Informed Designer



Informed Manager



Maker, and Adobe Illustrator—the software programs they primarily use—they will be working their Plus and 512KE without rest for quite a while.

Do they see the need for a higher-end machine soon? CEO Cris Lehman says they don't have a pressing need for color yet, but as the company grows, so will the size Mac he buys. The next purchase, he says, will probably be an SE.

University Games can be reached at 415/322-3953.

—Mary Margaret Lewis

## High-Speed Communication to Remote Macs

Engage Communication has begun shipping SyncRouter, a synchronous AppleTalk network router that connects to remote networks via high-speed communications services. SyncRouter includes Chooser-level software that lets you select printers, file servers, and other devices in the remote location. Previous routers were designed for use with Ethernet, which meant that Lo-

calTalk networks required one gateway to Ethernet and another gateway from Ethernet to the communications services.

SyncRouter comes with three I/O interfaces, an RS-232C port, an RS-449 port, and a V.35 connector. Any one of the interfaces can be used to connect to the supported communications paths, which include T1, Digital Data Service, fiber-optic lines, and satellite links.

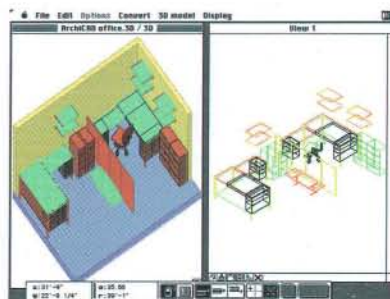
The router will also be compatible with ISDN (Integrated Services Digital Network) in the near future, according to Engage Communication. SyncRouter currently supports bidirectional data-transfer rates ranging from 54 kilobits per second to 1.544MB per second, depending on the carrier.

Because SyncRouter supports AppleTalk Phase 2, it can access a practically unlimited number of nodes at the remote location. It automatically maps the devices in the various zones and displays them at the Chooser level.

SyncRouter is available now from Engage Communication for \$1895. For more information, call the company in Foster City, California, at 415/358-0264.—T.M.

which developed MicroStation for Intergraph, says, "When you use IGES, it's time-consuming and information always gets lost in the [translation] process. ArchiCAD and MicroStation are communicating directly, resulting in more complete information being transferred between applications."

To send the dimensions for a wall,



The same office, modeled and shaded in ArchiCAD (left) and as a mechanical design in MicroStation.

for example, from one CAD program to another traditionally, you would first send the dimensions to a DXF or IGES translator, and then transfer them to the second program. These translators are geometric rather than object oriented, so by the time the wall reaches the second program, it is no longer a wall, with its sheathing, finish, and other qualities, but only a set of lines and unrelated characteristics. Those relationships have to be reestablished, which wastes time and leaves room for errors.

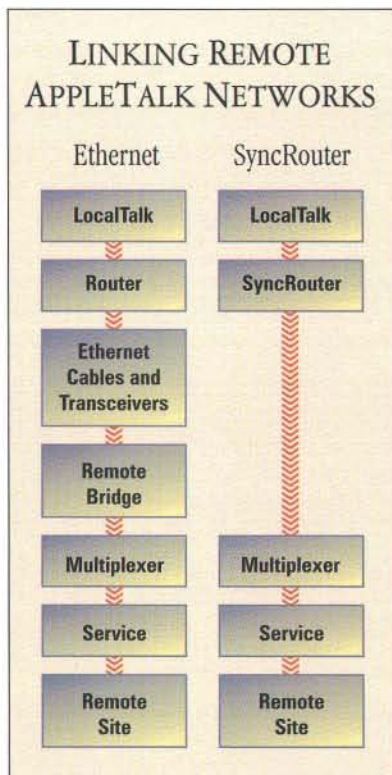
ArchiCAD and MicroStation can run together under MultiFinder with 5MB of memory, but 8MB is recommended. MicroStation lists for \$3300, and ArchiCAD for \$3950. For more information, contact Intergraph in Huntsville, Alabama, at 205/730-2000 and Graphisoft in South San Francisco, California, at 415/266-8720.

—Karen Sperling

## The Tour Guide Inside

**Agents**—tiny digital people inside your computer who pop up here and there to take orders or make suggestions—have lived in visionaries' dreams for years. Now programmers are catching up with the dreamers.

(continues)



SyncRouter eliminates the Ethernet step in communicating between remote AppleTalk networks.

## Object-Oriented CAD Communicates

Architects can now use two Macintosh CAD programs together to design everything from floor plans to ceiling fixtures, thanks to a link between the programs that is more intelligent than the IGES and DXF standards.

ArchiCAD, a 2-D and 3-D architectural modeling application from Graphisoft USA, can now be launched by Application User Commands (AUC), the object-oriented programming language underlying the generic drafting and design program MicroStation from Intergraph. Architects can use ArchiCAD's architectural drawing tools to design a floor plan, then use MicroStation's industrial design tools for details like plumbing, wiring, and even ceiling fixtures.

ArchiCAD can access MicroStation's preprogrammed object-oriented routines to manipulate graphics. Keith Bentley, president of Bentley Systems,



# INTRODUCING NEW DISKLOCK

*Unbreakable password protection for the Macintosh*

It's sad but true. All it takes is a few minutes with your back turned, and an intruder could walk away with your most confidential data. *And you'd never even know it!*

## *Unsurpassed Password Protection*

Now the leader in hard disk security announces the ultimate data protection system for your Macintosh. **DiskLock** works with any SCSI hard disk to provide foolproof password protection for individual files, folders, or your entire hard disk. You can even protect *all three levels* with different passwords for absolute maximum security. **DiskLock** automatically locks your files when you shut down or leave your Mac unattended, and alerts you to any unauthorized access attempts.

## *Sophisticated Data Encryption*

State-of-the-art data encryption adds yet another layer of security. Without the proper password, your confidential files appear to contain nothing but gobbledygook!

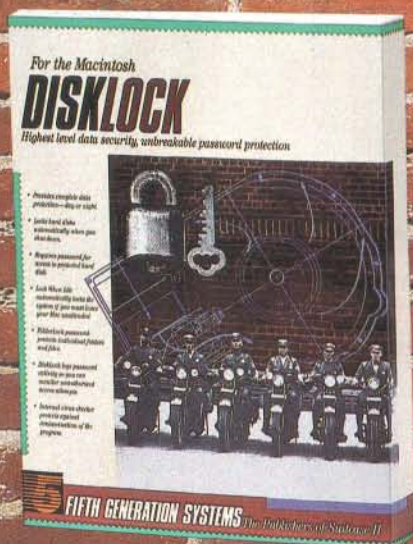
## *Multiple Security Levels.*

**DiskLock** lets you give each user password access to *just the files you choose* (word processing files for your secretary, accounting files for your bookkeeper, etc.). The *master* password gives you access to all files and folders.

## *Virus Protection, too!*

If **DiskLock's** automatic virus checker detects an infection when you log in to a file, it notifies you and stops running immediately.

Visit us at Macworld Exposition  
Moscone Center, San Francisco  
Booth 2137



STRICTLY  
NO  
TRESPASSING

## FIFTH GENERATION SYSTEMS

10049 N. Reiger Road Baton Rouge, LA 70809 (504) 291-7221

For a complete list of features and specifications, or the name of your nearest dealer, call 1-800-873-4384.  
Circle 250 on reader service card





**Synchronizing a talking agent's facial movements to a woman's voice as MacRecorder captures her speech.**

Bright Star Technology has published several HyperCard-based products for teaching languages and for building primitive talking agents, or *actors*, by generating speech from written language and coordinating speech with animated faces. Its most recent product, *interFACE*, is a compiled application, free of HyperCard's limitations. Bright Star's technology matches a universal phonetic language with facial expressions, though *interFACE* still must use Apple's robotic-sounding and phonetically nonstandard MacinTalk for its voice.

*interFACE* has many capabilities the earlier *HyperAnimator* lacked: actors can have 120 facial expressions, can be any size, and can appear in color, even in HyperCard stacks; a co-articulation capability lets actors change facial expression when pronouncing a phoneme altered by surrounding phonemes; multiple actors can appear at one time and quickly trade off speaking. With Bright Star's list of essential phonemes and a digitizing camera, you could even build a complete actor of your own face.

The RAVEL language has been expanded from 7 to 37 commands. The additional 30 commands enable you to assign agents to specific windows or applications; call the RAVE driver from any environment that supports outside calls (including C and Pascal, making it possible to code agents right into compiled applications); and make agents adapt to different Mac configurations.

Computers are only machines, but it may not be long before they'll have us fooled. Bright Star's products are moving on two parallel tracks: improving computing's human interface by making it sound more human; and

making speech synthesis good enough that people will use it. In fact, Bright Star may release the underlying language- and machine-independent engine, in hopes of establishing a speech-synthesis standard that would be equivalent to PostScript's position in the printer market.

*interFACE* will list for \$499.95. For more information, contact Bright Star Technology in Bellevue, Washington, at 206/451-3697. —D.L.

## For a Faster SE with a Second Monitor



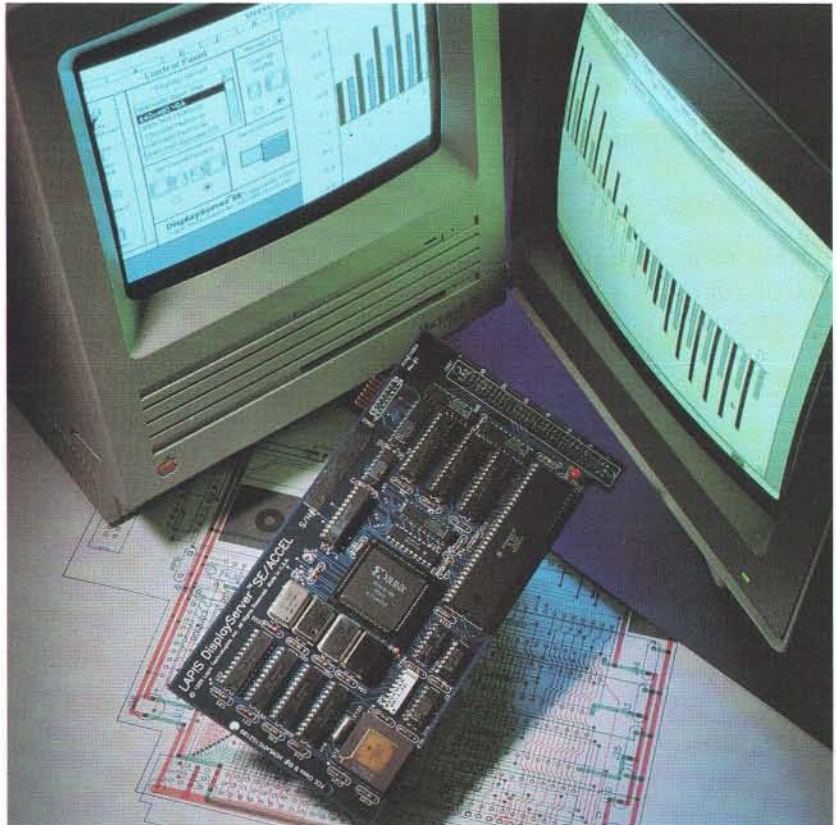
Lapis Technologies has introduced a multifunction add-in board for the SE that accelerates the system and supports a second display. Like Lapis's first products—the DisplayServer SE and DisplayServer II—the DisplayServer SE/XL supports an external Mac monitor or a non-Mac monitor such as a TTL, VGA, EGA, or multisyncing display. The DisplayServer SE/XL adds a 16MHz 68000 microprocessor that ac-

celerates the system, and both the acceleration and display functions reside on a single, standard SE board. The board does not provide color display.

Although speed increases will vary depending on the application, the 16MHz clock rate of the board's processor is twice that of the standard SE system board. The DisplayServer SE/XL also includes a socket for an optional 16MHz 68881 math coprocessor, which is sold by third parties.

The main advantage of supporting a non-Mac monitor is that monitors from the IBM PC world tend to be much less expensive than their Mac counterparts. Also, companies that have been replacing their PCs with Macs, or their monochrome displays with color devices, can now recycle the old monitors as inexpensive second displays for the Mac. The company recommends dealer installation of the device, but says that the process is about as difficult as adding SIMMs.

The list price for the DisplayServer SE/XL was not finalized at press time, (*continues*)



**Lapis Technologies' DisplayServer SE/XL combination board accelerates the SE and supports an external non-Mac or Mac monitor.**

LUIS DELGADO



# LIKE IT OR NOT, YOU'RE A SMALL BUSINESS.

You have income. You pay invoices. You have assets, liabilities and net worth. You show a profit or loss each month. You try to save for major expenses. And you pay taxes.

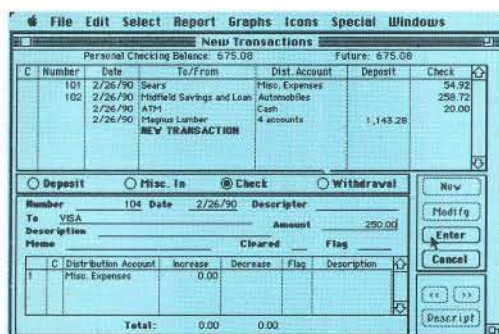
Just like a business.

So why not use the same powerful financial management tool more than 100,000 small businesses (and over 200,000 individuals) use?

## INTRODUCING DOLLARS AND SENSE® 5.0

For nearly 5 years now, Dollars and Sense has helped Macintosh® users get their financial lives in order. Now, version 5.0 brings new ease-of-use features and still more flexibility.

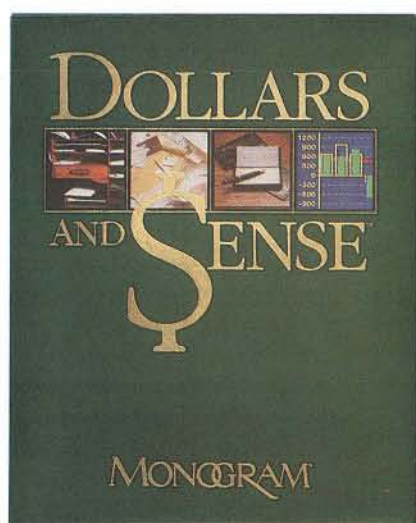
Dollars and Sense is much more than a mere checkbook balancer. It shows your complete financial picture—with customizable reports based on



Version 5.0 puts a friendlier face on the powerful business-capable financial planning program that became the industry standard.

industry-standard double-entry accounting practices. It acts like a personal financial manager, giving you the information you need to help attain your financial goals. And it requires no accounting knowledge.

You may upgrade to Dollars and Sense 5.0 from any commercially available financial management program. Simply send the cover of your manual along with \$59.95 (and any applicable sales tax) plus \$6 shipping and handling to Monogram at the address at right. Offer expires April 30 1990. Registered users of any version of Dollars and Sense for the Macintosh may upgrade to version 5.0 for \$34.95 plus applicable tax, and \$6 shipping and handling.



## FOR INDIVIDUALS AND FAMILIES

Dollars and Sense gives you graphical reports that show how you're doing against the budgets you've set. Its new interface lets you create custom reports you can save and recall as icons. It provides you with start up accounts for real estate management as well as personal finance. It even lets you design custom check layouts.



## FOR SMALL BUSINESSES AND HOME BUSINESSES

Dollars and Sense gives you real double-entry accounting. And it does it 'invisibly.' In fact, you can get started right away with one of our business start-up accounts.

Dollars and Sense gives you unlimited transactions and up to 9,999

## FEATURE COMPARISON

	Dollars and Sense	Quicken	MYM Mac
Prints checks	Yes	Yes	Yes
Pays bills automatically	Yes	Yes	Yes
Tracks income & expenses	Yes	Yes	Yes
Tracks assets, liabilities; equity	Yes	No	Yes
Full financial statements	Yes	No	Yes
Reports in graphic formats	Yes	No	Yes
Multiple checkbooks	Yes	No	No
Flexible custom reporting	Yes	No	No
Sub account levels	8	0	3
Easy to correct mistakes	Yes	No	No
Password security	Yes	No	No
Suggested list price	\$149.95	\$59.95	\$219.95

accounts. You can have multiple transaction accounts (like checks and credit cards) within a single file. And sub-accounts so that you can more precisely track income, expenses, assets and liabilities. And you won't waste time and effort, because unlike other financial programs, Dollars and Sense can export your account data to full-fledged business accounting programs.

**OUR SMALL  
BUSINESS PROPOSITION:  
Upgrade from other  
financial programs for just  
\$59.95!**

To introduce more people to the power of Dollars and Sense, we have a special limited-time offer: we'll allow you \$90 credit for any competing program you now own (see details below) when you trade up to Dollars and Sense 5.0.

This offer expires April 30, 1990. So think it over. But think fast. We're sure you'll make a businesslike decision.

# MONOGRAM

21821 Plummer St., Chatsworth, CA 91311

(818) 700-6200 Fax: (818) 700-6220

CompuServe®: 76701,113


©1990 Monogram Software, Inc.





but the company predicted it would be between \$650 and \$750. The board was scheduled to ship by the end of February. For more information, contact Lapis Technologies in Alameda, California, at 415/748-1600.—T.M.

## John Hancock Goes Mac

 Looking for the ultimate virus protector? Can't run a paperless office because too many documents need signing? Take a look at RSA Data Security's digital fingerprinting product.

RSASign and RSACheck are based on cryptographic technology developed at MIT in the late 1970s. Under this system, you have two keys—a public key, with which other users encrypt messages for you, and a private key you use to decrypt messages that have been encrypted with your public key.

Rather than encrypt data, RSASign and RSACheck verify the authenticity and integrity of documents by attaching an encrypted digital "signature" or "fingerprint." RSASign distills the contents of a file into a 16-byte digital fingerprint, which it then encrypts and inserts in that document as a resource. When the receiving party decrypts the signature, if even a single bit in the file has been altered—by tampering, by a virus, or even due to a disk-write

error—the two fingerprints won't match. Because only the tiny signatures are encrypted, signing and verifying files takes just a few milliseconds, and files can be processed in batches.

RSASign and RSACheck are most useful where data integrity or authorship is as important as secrecy. For example, when faced with managing the many versions of software they are developing, the programmers at RSA use RSASign to lock down a version and its documentation. RSA's technology can also be incorporated into other products—for example, Lotus uses the IBM PC version in its Lotus Notes, a groupware editing product.

A single copy of RSASign and RSACheck lists for \$195; site licenses and server versions are much less expensive. For more information, contact RSA Data Security in Redwood City, California, at 415/595-8782.

—Macworld Staff

## Physics On Screen



Mechanical physics is essentially the study of forces that put matter in motion, change its course, or stop it from moving. Physics students learn about motion by description, first anecdotal and then mathematical, but even using such common teaching tools as wave tanks, time-lapse films of bouncing ping-pong

balls, and 50-foot slinkies, the concepts are difficult to grasp.


Interactive Physics teaches mechanics by giving you control of a world. You build an environment using rectangles, circles, and polygons, then tie them together with anchor points, springs, ropes, and shock absorbers, and set it all in motion. You control the density, mass, and initial

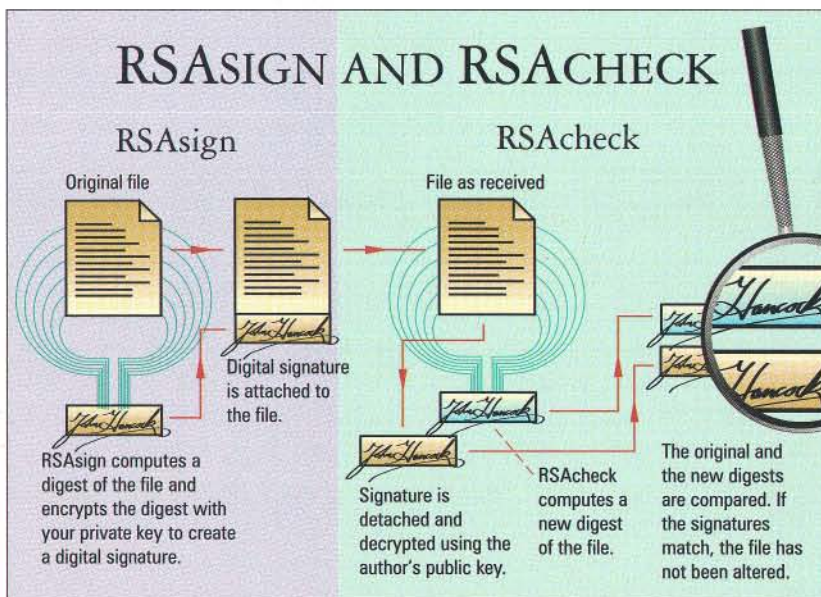


Professor John Ertel teaches mechanical physics to future navy officers.

velocity of each object; the tension of springs and shock absorbers; and even gravity and air resistance. A few lines moving about in a two-dimensional plane appear realistic because they are governed by the same math that describes motion in the real world—in fact, the sample file of a car and passenger crashing into a wall will undoubtedly make you cringe.

John Ertel teaches physics to two dozen second-year students at the U.S. Naval Academy, in Annapolis, Maryland, aided by Interactive Physics on a 37-inch Mitsubishi monitor. He says, "There are things you can do with Interactive Physics that you can't do in a lab—for example, slow down time as an action progresses." He doesn't know yet if test scores will improve, but students "can set up a problem and get a mental picture of it [which makes it] a whole lot easier to . . . understand the mathematics." Ertel adds that because Interactive Physics is mechanically oriented it is unsuited for teaching about sound, heat, and electromagnetism.

Interactive Physics lists for \$449. It runs on a Macintosh Plus or SE, but its performance is greatly enhanced by the math coprocessor in the SE/30 and II-family machines. For further information, contact Knowledge Revolution in San Francisco, California, at 415/377-1940.—D.L. 



To authenticate documents, RSASign and RSACheck reverse the standard method of using a public key to encrypt data and a private key to decrypt it.



Where savings are huge and advice is free.

The Mac Zone

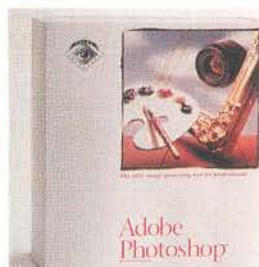
Get the inside story on hard drives - page 3



#### 1stAid Software, Inc.

A package no hard disk user should be without. Includes 1stAid Kit (complete Mac troubleshooting, including file & disk recovery), Complete Undelete (ultimate utility for recovering trashed files), and Sector Collector (safeguards data on hard disks by isolating bad sectors).

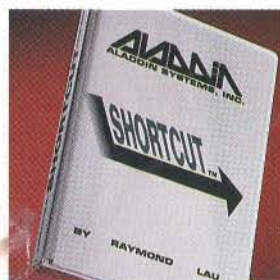
Deluxe 1stAid Kit ..... \$116.



#### Adobe Systems

Extraordinary new color tool allows you to design with photographs, illustrations & text all in one powerful program. Starting from a scanned in color or black & white photo, create professional quality changes (and even color corrections!) right on your Macintosh screen.

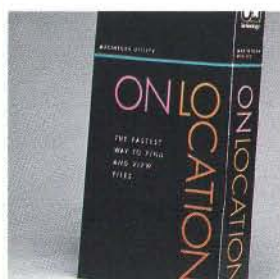
Photoshop ..... CALL



#### Aladdin Systems

Leap to folders and files, find lost files, save files in new folders decompress Stuftit files, and much, much more. With SHORTCUT and Stuftit, you can literally increase your hard drive capacity from 50% to 75%. Written by Raymond Lau, author of the ever popular Stuftit.

SHORTCUT ..... \$46.



#### ON Technology

This DA is the fastest way to find & view files. Find a file by typing words it contains or any part of its name. Instantly view the file, including original fonts & styles for word processing documents. Copy text or launch the file directly into its application. Also move, copy, rename, and delete files.

On Location ..... CALL

## SOFTWARE

### 1st Aid Software

Complete Undelete ..... 36.  
Deluxe 1st Aid Kit ..... 116.  
Sector Collector ..... 36.

### 3g Graphics

Images w/Impact  
Accents & Borders 1 ..... 64.  
Business 1 ..... 64.  
Graphics & Symbols 1 ..... 49.



MacinTax Federal ..... \$64.

### Softview

The complete, easy-to-use tax program for your Mac system. Be sure to ask about InstaFefund (your IRS refund in three days!).

### A Lasting Impression

Resumé Expert ..... 38.

### Aatrix

CheckWriter II ..... 32.  
Payroll 3.5 ..... 109.  
Payroll Plus ..... 173.  
TimeCard ..... 116.  
TimeMinder 2.1 ..... 179.

### Abbott Systems

CanOpener 1.0 ..... 64.

### ACIUS

4th Dimension 2.0 ..... 465.

### Addison Wesley

Programmers Online  
Companion 2.1 ..... 32.

### Adobe

ATM Plus Pack ..... 109.  
Illustrator 88 ..... 278.  
Streamline ..... 228.  
True Form ..... 220.  
Type Manager ..... 56.  
Typeset I or II ..... 60.

### Adobe Postscript Fonts

1 Palatino ..... 123.  
2 ITC Bookman ..... 123.  
3 ITC Zapf Dingbats & ITC Zapf Chancery Med. Ital ..... 92.  
4 ITC Avant Garde Gothic ..... 123.  
5 New Cent. Schoolbook ..... 123.  
6 Optima ..... 123.  
7 ITC Souvenir ..... 123.  
8 ITC Lubalin Graph ..... 123.  
9 ITC Garamond ..... 123.  
10 ITC American Typewriter & ITC Machine ..... 93.  
11 ITC Bengaliat & Friz Quadrata ..... 123.  
12 Glypha ..... 123.  
13 Helv. Light & Black ..... 123.  
14 Helvetica Condensed ..... 243.  
15 Trump Medieval ..... 123.  
16 Melior ..... 123.  
17 ITC Galliard ..... 123.  
18 ITC New Baskerville ..... 123.  
19 ITC Korinna ..... 123.  
20 Goudy Old Style ..... 123.  
21 Sonata ..... 61.  
22 Century Old Style ..... 93.  
23 ITC Franklin Gothic ..... 180.  
24 ITC Cheltenham ..... 123.  
25 Park Avenue ..... 61.  
26 Bodoni ..... 123.  
27 Letter Gothic ..... 123.  
28 Prestige Elite ..... 123.  
29 Orator ..... 93.  
30 News Gothic ..... 123.  
31 ITC Tiffany ..... 180.  
32 Cooper Black ..... 93.  
33 Stencil, Hobo & Brushscript ..... 93.  
34 Aachen, Revue, Univ. Roman & Freestyle Scr. ..... 123.  
35 Carta ..... 61.  
36 Lucida ..... 123.  
37 Univers ..... 243.

38 Univers Condensed ..... 180.  
39 Futura Light ..... 180.  
40 Stone Serif ..... 180.  
41 Stone Sans Serif ..... 180.  
42 Stone Informal ..... 180.  
43 Corona ..... 93.  
44 Eurostile ..... 180.  
45 Excelsior ..... 93.  
46 Futura ..... 180.  
47 Futura Condensed ..... 243.  
48 Lucida Sans ..... 123.  
49 Memphis ..... 243.  
50 Helvetica Compressed ..... 93.  
51 Italia ..... 93.  
52 Belve ..... 123.  
53 Caslon 3, Caslon 540 ..... 123.  
54 Goudy Ex Bold & Heavy ..... 93.  
55 Janson Text 55, Janson Text 75 ..... 123.  
56 ITC Eras ..... 180.  
57 ITC Kabel ..... 123.  
58 OCR-A, OCR-B, MICR ..... 93.  
59 Helvetica 1 ..... 123.  
60 Helvetica 2 ..... 180.  
61 Helvetica 3 ..... 180.  
62 Times Ten ..... 123.  
63 Kaufman ..... 93.  
64 Clarendon ..... 93.  
65 Peignot ..... 93.  
66 New Caledonia ..... 243.  
67 ITC Clearface ..... 243.  
68 Americana ..... 123.  
69 ITC Serif Gothic ..... 180.  
70 Century Expanded ..... 93.  
71 Serifa ..... 178.  
72 Caslon Open Face ..... 61.  
73 Frutiger ..... 235.  
74 Linotype Centennial ..... 239.  
75 Stempel Garamond ..... 123.  
76 Weiss ..... 123.  
77 Garamond 3 ..... 123.  
78 Univ. News, Commercial Pi, Univ. Greek & Math Pi ..... 93.  
79 Avenir 1 ..... 175.  
80 Avenir 2 ..... 175.  
81 Walbaum ..... 123.  
82 Antique Olive ..... 123.  
83 Life ..... 93.  
84 Concorde ..... 123.  
85 Gothic 13 & Tempo ..... 93.  
86 Cochin ..... 123.  
87 ITC Bauhaus ..... 123.  
88 Sabon ..... 123.  
89 Hiroshige ..... 235.  
90 A. Bocklin, F. Fraktur, Present Scr. & Helv. I ..... 123.

111 Bauer Bodoni II ..... 123.  
112 Meriden ..... 175.  
113 Copperplate Gothic ..... 243.  
114 ITC Novarese ..... 175.  
115 Künstler Script ..... 93.  
116 Industria ..... CALL.  
117 ITC Souvenir II ..... 123.  
118 Bodoni II ..... 123.  
119 Russell Square ..... 93.  
120 Charlemagne/Trajan ..... 123.  
121 Lithos ..... 123.  
122 Cottonwood/Ponderosa Ironwood/Mesquite/Juniper ..... 123.

**Advanced Software**  
DocuComp ..... 87.  
**AEC Management Systems**  
AEC Information Mgr ..... 409.  
FastTrack Schedule ..... 110.

**Affinity Microsystems**  
Tempo II ..... 74.

**Aladdin Systems**  
Shortcut ..... 46.

**Aldus**  
Freehand 2.02 ..... 338.  
PageMaker 3.02 ..... 384.  
PageMaker Color Ext. .... 149.  
Persuasion 2.0 ..... 335.

**ALSoft**  
DiskExpress II ..... 55.  
Master Juggler ..... 49.  
MultiDisk ..... 41.

**Altsys**  
Fontastic Plus ..... 51.  
Fontographer 3.0 ..... 249.

**Antic Software**  
Business Forms - PageMaker Vol. 1 Human Resources ..... 27.  
Vol. 2 Inventory/Stock ..... 27.  
Vol. 3 Operations/Admin. .... 27.  
Flexform Business Templates Volume I or II ..... 47.

**Ashton-Tate**  
dBASE Mac ..... 294.  
Full Impact ..... 248.  
FullWrite Professional ..... 255.

**Berkeley System Design**  
After Dark ..... 24.  
Stepping Out 2.01 ..... 50.

**Blyth Software**  
Omnis 5 Incrementer ..... 74.  
Omnis 5 Single User ..... 345.

**Bootware Software**  
ResuméWriter - Pro ..... 58.  
ResuméWriter - Student ..... 18.

**Borland International**  
Reflex Plus ..... 188.  
SideKick 2.0 ..... 67.  
Turbo Pascal 1.1 ..... 67.  
Turbo Pascal Tutor 1.0 ..... 49.

**Bright Star Technology**  
Hyper Animator 1.5 ..... 98.  
Interface ..... 229.

**Brøderbund**  
PosterMaker Plus ..... 34.  
Print Shop ..... 35.  
TypeStyle ..... 128.

**Caere**  
OmniPage 2.0 ..... 549.

**Casady & Greene**  
AME 1-10 Users ..... 978.  
AME 1-5 Users ..... 584.  
AME Single User ..... 179.  
QuickDEX ..... 31.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.

**Chameleon**  
Chameleon ..... 123.



Image Grabber ..... \$31.

### Sebastian Software

You can grab just about ANYTHING...desktop icons, full screen shots, color images, pull down menus, dialogue boxes, etc.

111 Bauer Bodoni II ..... 123.

112 Meriden ..... 175.

113 Copperplate Gothic ..... 243.

114 ITC Novarese ..... 175.

115 Künstler Script ..... 93.

116 Industria ..... CALL.

117 ITC Souvenir II ..... 123.

118 Bodoni II ..... 123.

119 Russell Square ..... 93.

120 Charlemagne/Trajan ..... 123.

121 Lithos ..... 123.

122 Cottonwood/Ponderosa Ironwood/Mesquite/Juniper ..... 123.

**Advanced Software**

DocuComp ..... 87.

**AEC Management Systems**

AEC Information Mgr ..... 409.

FastTrack Schedule ..... 110.

**Affinity Microsystems**

Tempo II ..... 74.

**Aladdin Systems**

Shortcut ..... 46.

**Aldus**

Freehand 2.02 ..... 338.

PageMaker 3.02 ..... 384.

PageMaker Color Ext. .... 149.

Persuasion 2.0 ..... 335.

**ALSoft**

DiskExpress II ..... 55.

Master Juggler ..... 49.

MultiDisk ..... 41.

**Altsys**

Fontastic Plus ..... 51.

Fontographer 3.0 ..... 249.

**Antic Software**

Business Forms - PageMaker

Vol. 1 Human Resources ..... 27.

Vol. 2 Inventory/Stock ..... 27.

Vol. 3 Operations/Admin. .... 27.

Flexform Business Templates

Volume I or II ..... 47.

**Ashton-Tate**

dBASE Mac ..... 294.

Full Impact ..... 248.

FullWrite Professional ..... 255.

**Berkeley System Design**

After Dark ..... 24.

Stepping Out 2.01 ..... 50.

**Blyth Software**

Omnis 5 Incrementer ..... 74.

Omnis 5 Single User ..... 345.

**Bootware Software**

ResuméWriter - Pro ..... 58.

ResuméWriter - Student ..... 18.

**Borland International**

Reflex Plus ..... 188.

SideKick 2.0 ..... 67.

Turbo Pascal 1.1 ..... 67.

Turbo Pascal Tutor 1.0 ..... 49.

**Bright Star Technology**

Hyper Animator 1.5 ..... 98.

Interface ..... 229.

**Brøderbund**

PosterMaker Plus ..... 34.

Print Shop ..... 35.

TypeStyle ..... 128.

**Caere**

OmniPage 2.0 ..... 549.

**Casady & Greene**

AME 1-10 Users ..... 978.

AME 1-5 Users ..... 584.

AME Single User ..... 179.

QuickDEX ..... 31.

**MBG**  
30-60 day money back guarantees on many items. Ask!

**OVERNIGHT DELIVERY \$3 PER ORDER**

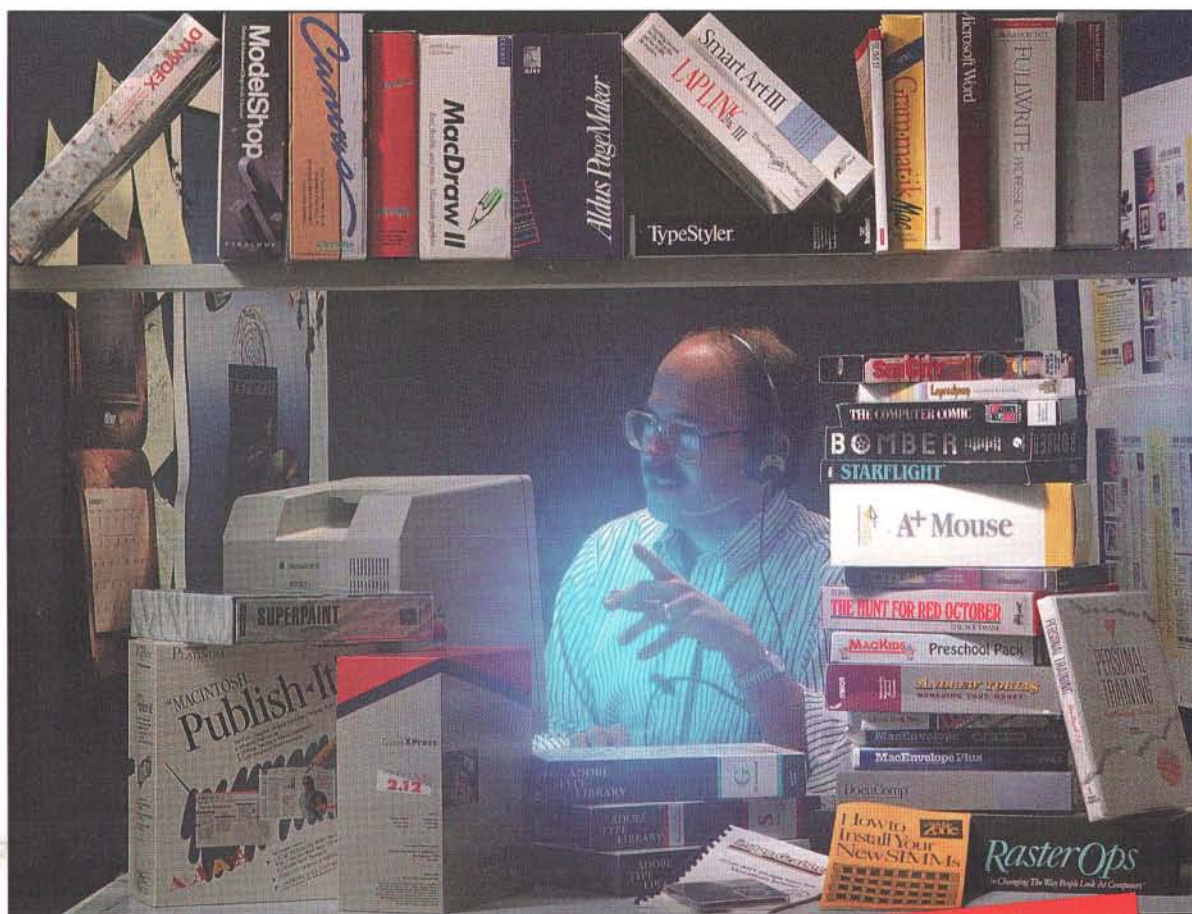


## THE INSIDE STORY

# On The MacZone

When it comes to choosing the right software or hardware products for your specific needs, get the straight story from a MacZone advisor. Phone the Zone and you'll talk with a knowledgeable, experienced Mac user who is working with the latest product versions. Your advisor will help you decide with clear answers to your questions instead of hype and sales pressure.

We'll save you time and frustration with valuable information before you order. And we'll save you money with some of the lowest prices anywhere. For the ideal solution to your Mac needs, give us a call. We're the Mac authority.



*Every MacZone advisor has instant access to the programs you may be considering via our in-house designed database. Your order will be placed and processed on a Macintosh SE/30 with 5 megs of RAM, a SyQuest 44 removable, linked to our state-of-the-art Ethernet twisted pair network.*

# The Mac Zone

## 1-800-248-0800

Intl: (206) 883-1975 Canada: 800-248-0344 FAX (206) 881-3421

Where savings are huge and advice is free. Why buy anywhere else?

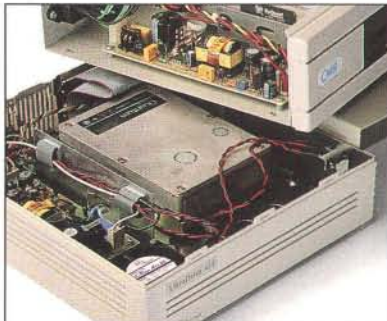


# The inside story on hard drives.



From the outside, hard drives look very different.

Remove the fancy case and the true manufacturer is revealed.



You could spend a bundle for one of their fancy cases.

Or, save a bundle for exactly the same drive from the MacZone.



When you look inside the cases you'll discover the brand names are the same. The real difference is cost. The choice is yours — and so are the savings.

## Zoner Loaner offer.

Our drives are backed by the best performance guarantee in the business. We'll ship a free loaner to you overnight if a MacZone drive ever needs warranty work.

## Design a MacZone Drive



Let the Zone put together your perfect drive. Pick a drive. Pick a platinum or black case, or internal kit. We'll put it together, test it and guarantee it with the Zoner Loaner Program, and a 1 or 2 year drive warranty and send it out to you today for delivery tomorrow!

### MacZone Hard Disk Cases

Black or Platinum

#### External Enclosure Kits

Half Height Enclosure ..... 178.  
Full Height Enclosure ..... 220.  
Syquest Enclosure ..... 178.

#### Internal Mounting Kits

3.5" Drive Bracket ..... 38.  
5.25" Drive Bracket ..... 69.

#### 3.5" Hard Disks

##### CDC Half Height Drive

CDC 135 Mb ..... CALL  
CDC 172 Mb ..... CALL

##### Connor Half Height Drive

Connor 100 Mb ..... CALL

##### Quantum Half Height Drive

Quantum 40 Mb ..... 410.  
Quantum 80 Mb ..... 648.  
Quantum 105 Mb ..... 748.

##### Seagate Half Height Drive

Seagate 20 Mb (28 ms) ..... 315.  
Seagate 30 Mb (28 ms) ..... 355.

Seagate 45 Mb (28 ms) ..... 398.  
Seagate 60 Mb (28 ms) ..... 530.  
Seagate 80 Mb (28 ms) ..... 598.

#### 5.25" Hard Disks

##### CDC Full Height Drive

CDC 150 Mb ..... 1,398.  
CDC 300 Mb (16 ms) ..... 1,845.  
CDC 300 Mb H (10 ms) ..... 2,198.  
CDC 600 Mb ..... 2,885.

##### CDC Half Height Drive

CDC 170 Mb ..... 1,195.

##### Micropolis Half Height Drive

Micropolis 150 Mb ..... 1,148.  
Micropolis 330 Mb ..... 1,895.

##### Micropolis Full Height Drive

Micropolis 675 Mb ..... 2,938.

##### Seagate Half Height Drive

Seagate 60 Mb ..... 460.  
Seagate 80 Mb ..... 495.

##### SyQuest

SyQuest 44 Mb Drive ..... 625.



### West Coast Paper

The finest computer paper products from the Northwest's premier paper supplier. Available in single sheet form for use with laser printers or continuous form feed paper for dot matrix style printers. Ask your MacZone salesperson for details about selection and shipping costs.

LaserWriter & ImageWriter Paper .. CALL



### Sony Disks

Double sided (800k) and High density (1.4 megabyte) floppy disks for use in any Macintosh. All Sony disks come complete with the Sony Full lifetime warranty - 100 percent certified error free. Available in boxes of 10, or save money by buying bulk packs of 50 disks at a time.

DS & HD Disks ..... see listings



### Keytronic

Positive, tactile key response. Ergonomic design for optimum user comfort. Quality key switches guarantee long-term reliability. Three-year limited warranty, and unlimited toll-free product support. Comes complete with Tempo II, a powerful easy to use macro program.

MacPro ADB 105 & Tempo II ..... \$125.



# Products & advice on your phone 1-800-248-0800

## CE Software

CalendarMaker 3.0	31.
DiskTop 4.0 w/GOfer	64.
In/Out (1-10 User)	188.
In/Out (1-5 User)	128.
MockPackage Plus	31.
QuickKeys 1.2	64.
QuickMail 2.2	
1-5 Users	210.
1-10 Users	315.
1-50 Users	CALL
Administrator Pack	CALL
Single User Pack	CALL



## TypeAlign .....\$60.

**Emerald City Software**  
Exclusively for ATM owners:  
give type a change of face  
with TypeAlign. Convenient  
DA - for use with all major ap-  
plications.

7 & 8 Special Occasions	39.
9 & 10 Printer's Helper	39.
11 & 12 Industrial Rev.	39.
13 & 14 Old Earth Alm.	39.
15 & 16 Island Life	39.
17 & 18 All The People	39.
World Class Fonts	
Vol 1 & 2 (Originals)	39.
Vol 3 & 4 (The Stylish)	39.
Vol 5 & 6 (Giants)	39.
Vol 7 & 8 (Triples)	39.
World Class LaserType	
Vol 1 - 9	each 39.

## Electronic Arts

Disk Tools Plus	31.
Studio/1	96.
Studio/8	296.
Thunder II	49.

## Emerald City Software

Smart Art 1, 2 & 3	each 84.
Type Align	60.

## Farallon

PhoneNet Check Net	64.
Screen Recorder	127.
Traffic Watch	128.
Timbuktu 3.0	
Single User	95.
30 User Pack	1,285.
Timbuktu Remote	125.
w/9600 V.32 Modem	895.

## Farallon/Electronic Arts

MacRecorder 2.0/Studio 1	Bundle	210.
--------------------------	--------	------

## Fifth Generation

Disk Lock	108.
Fast Back II	107.
PowerStation 2.5	34.
Pyro! 3.3	14.
Suitcase II	44.

## Foundation Publishing

Comic Strip Factory	38.
#1 Office Days	21.
#2 Kid Stuff	21.

## Fox Software

FoxBASE+ 2.0	294.
FoxBASE+ Multi User	388.
FoxBASE+ Runtime	179.

## FreeSoft

Red Ryder Host 2.0	99.
White Knight 11	85.

## Generic Software

Generic CADD Level 1	84.
----------------------	-----

## Hayes

Smartcom II 3.1	85.
-----------------	-----

## Help Software

Desktop Help for Excel	49.
------------------------	-----

## High Performance Systems

STELLA 2.1	385.
STELLA Stack1.0	275.

## HJC Software

Virex 2.2	52.
-----------	-----

## ICOM Simulations

HyperTMON	58.
On Cue 1.3	35.
TMON 2.8.2	87.

## Individual Software

101 Macros for Excel	36.
101 Scripts & Buttons	36.

## Informix

Wingz 1.1	245.
-----------	------

## Infosphere

Liaison	175.
---------	------

## Innovative Data Design

Dreams	325.
--------	------

## MacDraft 1.2b

MacDraft 1.2b	178.
---------------	------

## Insight Development

MacEnvelope	79.
MacPrint 1.2	94.

## Insomnia Solutions

Soft PC	245.
Soft PC Portable	245.

## Intuit

Quicken 1.5	36.
-------------	-----

## Jam Software - Smart Alarms

Single User Version	48.
1-4 Users	99.
5-8 Users	145.
9-15 Users	195.
16-25 Users	295.

## Kent Marsh

MacSafe	87.
---------	-----

Night Watch	87.
QuickLock	56.

## Kiwi Software

KiwiEnvelopes!	38.
----------------	-----

## Layared

At Once!	285.
----------	------

## Insight Expert Series

Accounts Payable	399.
Accounts Receivable	399.
General Ledger	399.
General Payroll	395.
General Time Billing	399.
Inventory	399.

## Letrasel

ImageStudio	274.
LetraStudio	274.
ReadySetGo! 4.5	274.

## Lexpertise U.S.A. Inc.

Mac Proof 3.2.1	114.
-----------------	------

## Loop Software

Picture Book	39.
--------------	-----

## Lundeen & Associates

Works Plus Command	84.
Works Plus Spell	56.

## Mac Master

Fedit +	28.
---------	-----

## MacroMind

MacroMind Accelerator	117.
-----------------------	------



**Comic Strip Factory & Comic People 1&2** see list  
**Foundation Publishing**  
Software for creating your  
own comic strips. Also avail-  
able: **Comic People** (clip art  
comic characters).

MacroMind CD ROM	149.
MacroMind Director	439.
VideoWorks II	172.

## Mainstay

Capture 2.0	42.
MacFlow 3.0	125.
MacSchedule 2.0	149.
Think N Time	55.
V.I.P.	87.

## MECA Ventures Inc.

Managing Your Money	124.
---------------------	------

## Mediagenic

Focal Point II	118.
Reports 1.2	68.

## Micro Planning Software

Micro Planner Plus 6.1e	325.
-------------------------	------

## Microlytics

Electronic WordFinder	74.
GOfer 2.0	44.
WordFinder	32.

## Microseeds

INIT Picker	27.
Redux	51.
Screen Gems	39.
WristMac Standard	144.
WristMac Pocket	178.
WristMac Executive	185.

## Microsoft

Excel 2.2	247.
File 2.0	125.
Office	529.
PowerPoint 2.01	249.
Quick BASIC 1.0	65.
Word 4.0	247.
Works 2.0b	179.
Write	78.

## Microsoft Mail 2.0

Mail Server 2.0	248.
1 Workstation	83.
20 Workstations	965.

## Monogram

Dollars & Sense	79.
-----------------	-----

## Nolo Press

For The Record	28.
Will Maker 3.0	32.



## Managing Your \$ ....\$124.

## Meca Ventures

Written by Andrew Tobias,  
easily the most complete  
Personal Accounting package  
available for Macintosh.

## Odesta

DataDesk Professional	285.
Double Helix III	337.
Double Helix Multiuser	289.
GeoQuery 1.0	198.

## Olduvai Software

MultiClip	49.
Plus 1.1	114.
Read-It! 2.1	249.
Read-It! Personal	119.

## Orange Micro

Alphabits	68.
Grappler Spooler	49.

## Paracomp

Milo	158.
Model Shop	377.
Swivel 3D 1.1	294.

## Paragon Courseware

Nisus 2.02	224.
QUED-M	98.

## Personal Bibliographic

ProCite	198.
---------	------



## Business Hours

Our phone lines are open for orders:

<b>Mon - Fri:</b>	<b>8am to 1am Eastern Time</b> <b>5am to 10pm Pacific Time</b>
<b>Sat &amp; Sun</b>	<b>9am to 9pm Eastern Time</b> <b>6am to 6pm Pacific Time</b>

Customer Service & Tech Support:

<b>Mon - Fri:</b>	<b>11am to 7pm Eastern Time</b> <b>8am to 4pm Pacific Time</b>
-------------------	-------------------------------------------------------------------

## Ordering Information

We accept VISA, MASTERCARD, AMERICAN EXPRESS & OPTIMA Card. **No surcharge added.**



- If we must ship a partial order, we never charge freight on the shipments that complete the order (U.S. only).
- Your credit card will not be charged until products ship.
- Personal and company checks under \$1,000 clear immediately. Allow one week for checks over \$1,000.
- Most check orders clear immediately.
- Government, School and Institutional PO's clear immediately (some corporate accounts require credit approval).
- No sales tax (except WA residents add 8.1% to total incl. shipping).
- All prices subject to change without notice.
- All items subject to availability.

## Shipping Information USA

- All orders add \$3.00 per order. We ship all items Airborne Express overnight service. (Some rural areas require an extra day.)
- Orders placed by 7:30pm Eastern Time, 4:30pm Pacific Time (weekdays) for "in stock" items ship same day (barring system failure, etc.) for overnight delivery.
- APO/FPO orders shipped 1st class mail, charged by weight.
- Alaska, Hawaii call for special shipping information.

## International Orders (Tel. 206.883.1975)

- We accept VISA, MASTERCARD, AMERICAN EXPRESS & Bank checks in U.S. funds.
- We ship anywhere in the free world, using the quickest & least expensive methods possible.
- 2nd Day Air Service, available to most of Europe, Australia, & Japan.
- Orders are shipped by FedEx, TNT SkyPack, Postal Service, Airborne, & UPS, please specify.
- Freight charged by weight.
- Approx. freight charges: 1-3 kilograms \$50., 4-7 kilograms \$100.
- If payment is made by check, please include adequate shipping charges, we will refund you the difference.
- All orders will ship complete unless otherwise stated.
- No surcharge added to shipping.
- When ordering by mail or FAX please include phone# & FAX#.
- All credit card orders must include shipping address & address to which your credit card bills come.

## Electronic Orders

- E-Mail your orders or questions to us via Compuserve (73667.3636), GENIE (MACZONE) or Connect (MACZONE).
- MacZone uses CE Software's QuickMail to check our mail hourly.

## Warranties & Guarantees

- All products are covered by a 120 day limited warranty.
- Defective software replaced immediately. Hardware replaced or repaired at our discretion after first 30 days.
- Mac Zone has a 30 day money-back guarantee on hardware.
- Software and hardware is subject to manufacturer's warranty. Defective items will be replaced immediately with like item(s).
- All hard drives come with a Zoner Loaner guarantee. Loan drives subject to availability (USA Only).
- If you are not completely satisfied with a purchase, many of the products we sell come with a 30 to 60 day money back guarantee. Ask for details when you place your order.
- All returns must have an authorization number. Call 800-248-0800.
- Mac Zone aims to please.

©1989 Multiple Zones International

The MacZone is a trademark of Multiple Zones International. This ad was created in PageMaker™ by the MacZone advertising department and output to a Linotronic 300.

MEMBER

**MMC**  
of the Direct Marketing Association, Inc.

# 1-800-248-0800

Intl: (206) 883-1975 Canada: 800-248-0344 FAX (206) 881-3421

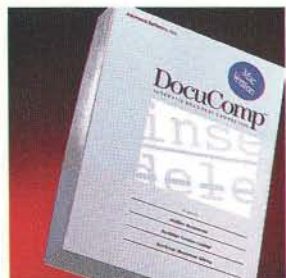
MacZone 18005 NE 68th St., Suite A110, Redmond, Washington 98052 USA



# Complete solutions for **HARDWARE** 1-800-248-0800

The Mac  
**Zone**

**For overnight  
delivery, phone  
the Zone**



**DocuComp .....\$87.**

## Advanced Software

Compare two versions of a word processing file. DocuComp reports changes as minor as an added comma and as major as a complete rearrangement of text! Writers, editors, attorneys & programmers in Fortune 500, government & academic circles are adopting DocuComp as a standard!



**TOPS Network Bundle for Macintosh \$188.**

## TOPS

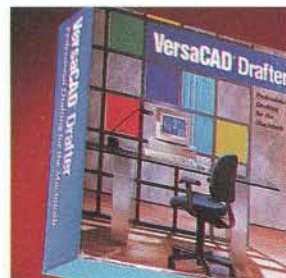
The complete network solution: All services you need in a single package, including file sharing, InBox electronic mail and network printing capabilities. No need to dedicate a computer as a server. Networks can expand with the workgroup. Connects Mac, PCs and Sun Workstations.



**atOnce! .....\$285.**

## Layered

The next generation in business accounting software. So easy to learn, many business managers will be completely at ease doing their own accounting. So fast & flexible, professional accounting & bookkeeping firms can now use Mac for handling numerous companies & volume data.



**VersaCAD Drafter .....\$419.**

## VersaCAD

Why play around with amateur CAD software when you can have the choice of professionals - VersaCAD. This full-featured 2D program has swept all the major Mac awards. Architecture magazine calls it "the standard of comparison for Macintosh CAD programs." Serious performance at a low cost.

## PLI Software

Turbo Back .....	49.
Turbo Cache .....	59.
Turbo Optimizer .....	25.
Turbo Spool .....	59.
Turbo Bundle (all above) .....	120.

## Power Up

Address Book .....	55.
...w/Leather Notebook .....	83.
Fast Forms .....	89.

## Preferred Publishers

DAtabase .....	68.
Exposure .....	52.
Vantage .....	51.

## Prescience

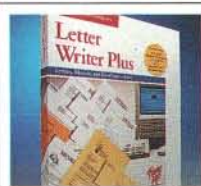
Expressionist 2.03 .....	78.
Theorist .....	229.

## Pro Plus Software

Wall Street Investor .....	395.
----------------------------	------

## Prometheus

MacKnowledge .....	130.
--------------------	------



**Letter Writer Plus .... CALL**

## Power Up!

A handy desk accessory that puts powerful, easy to use letter writing and mail merge tools at your immediate disposal.

## ProVUE

Panorama 1.5 .....	199.
--------------------	------

## Quark

QuarkExtras .....	55.
QuarkStyle .....	169.
XPress 2.12 .....	455.

## Reference Software

Grammatik IV .....	56.
--------------------	-----

## Sabastian Software

Image Grabber 2.0 .....	31.
-------------------------	-----

## Satori

Bulk Mailer 3.2.3 .....	77.
-------------------------	-----

## Select Micro Systems

Exstatix 1.2 .....	214.
MapMaker 4.0 .....	239.

## Silicon Beach Software

Digital Darkroom .....	248.
Super 3D .....	315.
Super Card .....	125.
SuperPaint 2.0 .....	124.

## SmethersBarnes

ProtoTyper 2.1 .....	185.
----------------------	------

## Smith Micro Software

QuickLink .....	48.
-----------------	-----

## Softview

MacInTax Federal 1989 .....	64.
California Supplement .... CALL	
New York Supplement .... CALL	
MacInTax Professional .... CALL	

## Software Ventures

Microphone 1.5 .....	109.
Microphone II .....	215.

## Solutions

backFax .....	124.
Curator .....	72.
SmartScrap & Clipper .....	45.
Super Glue II .....	61.

## Somak

Script Edit .....	49.
-------------------	-----

## SuperMac Software

Disk Fit 1.5 .....	58.
Network Disk Fit .....	225.
PixelPaint 2.0 .....	224.
PixelPaint Pro .....	389.
Sentinel 2.0 .....	86.
SuperSpool 5.0 .....	58.

## SuperLaserSpool 2.0

Single User .....	85.
Multi User (1 to 5) .....	289.

## Survivor Software

Invoice It .....	49.
MacMoney 3.5 .....	59.

## Symantec

Just Enough Pascal .....	49.
Lightspeed Pascal 2.0 .....	99.
More II .....	249.
S.A.M. .... CALL	
S.U.M. II .....	94.
Think C 4.0 .....	165.

## Symmetry

Acta Advantage .....	64.
HyperDA 1.2 .....	48.
Key Plan .....	245.
Picture Base 1.2 .....	54.

## Synergy Software

KaleidaGraph 2.0 .....	145.
Versa Term 4.0 .....	88.
Versa Term Pro 3.0 .....	174.

## Synex

MacEnvelope .....	81.
MacEnvelope Plus .....	179.

## T/Maker

WriteNow 2.0 .....	108.
--------------------	------

## Tactic Software

ArtClip 1st Ed .....	49.
ArtClip 2nd Ed .....	64.
ArtFonts 1, 2 & 3 .....	ea. 48.
ArtFonts Pak .....	129.
FontShare .....	129.
Icon-It .....	46.
Sound Clips 1 .....	48.
Sound Clips 2 .....	48.

## TGS Systems

Prograph .....	126.
----------------	------

## TimeSlips Corporation

TimeSlips III .....	168.
---------------------	------

## Timeworks

Hyperworks Organizer .....	57.
Publish It! .....	219.

## TML Systems

TML Pascal II 3.0 .....	56.
...w/MPW 3.0 .....	108.
TML Source Code Library .....	39.

## TOPS

DOS Administrator .....	215.
Mac Administrator .....	215.
InBox 3.0/ + Macintosh .....	628.
TOPS (DOS Version) .....	99.
TOPS Network Bundle (Mac Version) .....	188.
TOPS NetPrint 2.0 .....	117.



**Director .....\$439.**

## MacroMind

Create full color & sound animated presentations, storyboards, educational courseware, point of sale displays, or music videos.

## Totem Graphics

### Color Clip Art by Subject

Birds .....	98.
Domestic Animals .....	98.
Fish .....	98.
Flowers .....	98.
Food .....	98.
Holidays .....	98.
Insects .....	98.
Nautical .....	98.
Sports .....	98.
Tools & Hardware .....	98.
Wild Animals .....	98.
Women .....	98.

### Color Clip Art by Volume

1 - 12 .....	each 74.
--------------	----------

## Traveling Software

Lap-Link Mac 2.0 .....	81.
Lap-Link Mac Release III .....	128.
Connectivity Pack .....	128.
Lap-Link Mac Release III .....	189.

## Trendware

XCAL .....	77.
------------	-----

## True BASIC, Inc.

True BASIC 2.02 .....	56.
-----------------------	-----

## True BASIC Graphics Toolkits

3-D Graphics .....	43.
Business Graphics .....	45.
Scientific Graphics .....	43.
Developer's .....	43.
Mathematician's .....	43.
Sorting & Searching .....	43.
Advanced String .....	43.
Communications Support .....	43.
FORTTRAN Converter .....	43.



**True BASIC Toolkits ..\$43.**

## True BASIC, Inc.

Extend the capabilities of the True BASIC language system with powerful libraries of optimized subroutines developed by experts!

## U.S. Micro Labs

FontSizer II .....	69.
--------------------	-----

## VersaCad

VersaCad Drafter .....	419.
------------------------	------

## Visionary Software

Synchronicity .....	36.
---------------------	-----

## Williams & Macias

myDiskLabeler .....	28.
---------------------	-----

...for ImageWriter .....	33.
--------------------------	-----

Labels, 216 (ImageWriter) ..	15.
------------------------------	-----

Labels, 216 (LaserWriter) ..	18.
------------------------------	-----

Sticky Business .....	89.
-----------------------	-----

## WordPerfect Corp.

WordPerfect 1.0.3 .....	189.
-------------------------	------

## Working Software

QuickLetter .....	73.
-------------------	-----

## Xerox (Datacopy)

AccuText .....	545.
----------------	------

## Zedcor Inc

DeskPaint/DeskDraw .....	64.
--------------------------	-----

ZBasic 5.0 .....	89.
------------------	-----

# HARDWARE

## Scanners

### Abaton Scanners

300/GS (8 Bit) .....	1,495.
300/S (4 Bit) .....	1,198.

### Logitech

Scan Man .....	320.
----------------	------

### Mirror Technologies

Flatbed Scanner 200dpi .....	498.
Flatbed Scanner 300dpi .....	625.

### RasterOps

TrueCapture 324 .....	1,995.
...w/ColorBoard 264 .....	2,395.
w/Comp. Video Option .....	2,398.

### Sharp Color Scanners

JX 300 .....	3995.
JX 450 .....	5995.

### Thunderware

Lightning Scan .....	368.
ThunderScan 5.0 .....	179.

## Modems

### Everex

EMAC Md2400 MNP 5 .....	198.
-------------------------	------

### Hayes

Smartmodem 2400 .....	385.
Smartmodem 9600 .....	899.

### MacTech - SmartLink Modem

2400m (MNP 5) .....	245.
2400s .....	139.

### Prometheus

9600m Plus V.32 .....	768.
-----------------------	------

### Shiva Corporation

NetModem V2400 .....	439.
----------------------	------

### Supra Corp.

Supra Modem 2400 .....	119.
------------------------	------

**MBG**  
30-60 day money back  
guarantees on many items. Ask!

**OVERNIGHT DELIVERY  
\$3 PER ORDER**



# One call source for Mac solutions 1-800-248-0800



## ALTRA

A completely new design in pointing devices. Designed to be used with the fingers, using the same motion as writing with a pen. The optical measurement system combined with the on-board micro processor enables Felix to provide unmatched ease of use and pointing control.

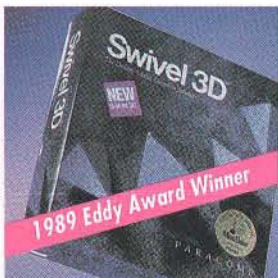
**Felix ..... \$125.**



## SYNEX

**MacEnvelope:** Print graphics, messages, mailing addresses, return addresses & Postal Bar Code on any envelope or label on any printer. **MacEnvelope Plus:** 100,000 names per file, eliminates duplicate addresses, tracks names with comments & flags, multi level sorts.

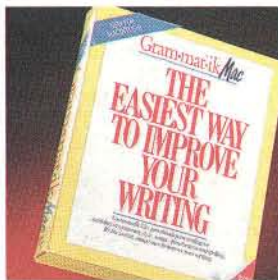
**MacEnvelope & Plus ..... see listings**



## Paracom

Best selling fastest color drawing/modeling program. Ideal for newsletter publishers graphic artists, animators, illustrators, product designers, communication specialists. Endless uses: images, overheads, charts, slides, logos, storyboarding, animation. Free Image Library, req. 1mb.

**Swivel 3D™ ..... \$294.**



## Reference Software

This full featured grammar & style checker can help anyone improve their writing. Finds thousands of common errors by parsing a sentence, comparing each word against a complete collection of writing rules, and lets users fix them immediately. Answers most grammar & style questions.

**Grammatik Mac IV ..... \$56.**



## Farallon

To capture, manipulate, bend, twist, echo, or just generally play with sound & sound resources, MacRecorder does it all.....\$162.

## Electronic Arts

Studio/1 is a unique combination of black & white graphics combined with powerful and EASY on screen animation.....\$96.

**Mac Recorder & Studio/1 Bundle ... \$210.**



**SmartLink 2400S .... \$139.**

**SmartLink 2400M ... \$245.**

## MacTech

2400 baud modem, Bitcom communications software, and Mac to modem cable in one complete package.

## Telebit

T-1000 (9600 BPS) ..... 699.  
T-2000 (19,000 BPS) ..... 1,254.  
T-2500 V.32 (19,000) .... 1,254.

## U.S. Robotics

2400 Baud ..... 325.  
9600 HST Baud ..... 685.

## Monitors & Cards

### Micron Color Cards

for SE/30, II, Ix, IIfx, & Ili  
Xceed (8 Bit - 13") ..... 385.  
Xceed (8 Bit - 19") ..... 598.

### NEC Color Monitors

NEC MacSync 14" ..... 498.  
NEC Multisync XI 20" ..... 2,695.

### RasterOps

ClearVue/SE 19" Monitor w/  
16MHz Board ..... 1,595.  
Trinitron 19" Monitor ..... 3,398.

### ColorBoards

108+ (II, IIfx, IIfx, Ili) ..... 899.  
108+ (SE/30) ..... 1,045.  
224 (32 Bit - 19") ..... 3,151.  
264 (II series - 13") ..... 755.  
264 (SE/30 - 13") ..... 1,038.

### Sony - Color Multiscan

14" 1304 HG Color ..... 795.  
16" HG Color ..... 2,498.  
19" HG Color ..... 3,198.

## Accelerators & Upgrades

### Dove

**MacSnap Upgrades**  
524 (512k to 1 Mb) ..... 192.  
524e (512k to 1 Mb) ..... 185.  
524s (524e w/SCSI) ..... 235.  
548 (512k to 2 Mb) ..... 432.  
548e (512k to 2 Mb) ..... 415.  
548s (548e w/SCSI) ..... 475.  
SCSI Port Adapter ..... 109.

**Marathon 020 SE Accelerators**  
MSE1 (Board Only) ..... 419.  
MSE2 (...w/1 Mb) ..... 695.  
MSE3 (...w/68881) ..... 579.  
MSE4 (...w/68881 & 1Mb) ..... 875.

**Marathon 030 Accelerators**  
Mac II series or SE/30 ... ea. 965.  
Marathon Racer ..... 148.

### Macintosh Memory Upgrades

available in 70ns - 120ns  
256k SIMMs .....  
1 Mb SIMMs .....  
4 Mb SIMMs ..... Call for prices

### Motorola

**Math Co-Processors**  
68882 - 16MHz ..... 289.  
68882 - 25MHz ..... 399.  
68882 - 33MHz ..... 695.  
68882 - 40MHz ..... 748.

### National Semiconductor

Maccelerate A/Ux ..... 469.

### Orchid Technology

Mac Sprint II ..... 249.

### Total Systems

**Gemini 020/030 Accelerators**  
68020 SE - 16MHz ..... 697.  
68020 SE - 25MHz ..... 1,118.  
68030 SE - 16MHz ..... 976.  
68030 SE - 20MHz ..... 1,118.  
68030 SE - 25MHz ..... 1,285.  
GemKit (allows user to put Gemini 020/030 Accelerators in Mac+, 512k, 512k, & 128k. Includes internal fan, SCSI port, and space for extra RAM memory) .... 149.

## Hard Disks & Backups

### Everex - EMAC Drives

60/60dti Deluxe ..... 1,495.  
60t (Tape Backup) ..... 658.  
Impact Tape (150 Mb) ..... 985.  
Impact 40 Plus ..... 735.  
Impact 80 ..... 1,095.

### PLI (Peripheral Land, Inc.)

Infinity 40 Turbo ..... 998.  
Infinity 40/40 Turbo ..... 1,798.  
Infinity Optical 600 Mb ..... 3,998.  
TurboFloppy 1.4 ..... 345.

## Networking Hardware

### Adaptec

Modem E/Thinknet ..... 383.  
Modem T/Twisted Pair ..... 454.

### Cayman Systems

Gator Box ..... 2,159.  
Gator Mail Gateway ..... 698.  
Gator Mail to Unix ..... 698.  
Gator Share Software ..... 1,398.  
Gator Card (Mac SE, II, IIfx, Ili, or SE/30) ..... ea. 460.

### David Systems

Twisted Pair Ethernet  
Easy to install. Please call for information and current prices.



**Icon-It! ..... \$46.**

### Tactic Software

With a simple click on one of Icon-It's custom designed icons, you can select menu items, DA's, fonts, and even macros.

### Dove

**FastNet Equipment**  
Fastnet AE ..... 1,249.  
Fastnet SE or SE/30 ..... 365.  
Fastnet III ..... 365.  
II Intelligent Controller ..... 545.  
Fi-1 Ethernet LAN/68020  
Accelerator SE ..... 895.  
SCSI CheaperNet ..... 748.  
SCSI Thickwire Ethernet ..... 849.

### Farallon - PhoneNet

DB-9 ..... 29.  
DIN-8 ..... 32.  
DIN-8 (10 Pack) ..... 198.  
Star Connector ..... 19.  
Star Connector (10 Pack) ..... 198.  
Star Controller ..... 825.  
Star Controller EN ..... CALL.  
Repeater ..... 315.

### Hayes

InterBridge ..... 648.

### Kinetics

EtherPort ..... 469.  
EtherPort Lattis Net ..... 498.  
Fast Path ..... 1,945.

### MacTech

ZoneNet - DB-9 or DIN-8 ..... 17.

### Nuvotech

NuvotLink SC ..... 345.  
Turbo Bridge ..... 318.  
Turbo Net - DB-9 ..... 22.  
Turbo Net - DIN-8 ..... 21.  
Turbo Net ST - DB-9 ..... 30.  
Turbo Net ST - DIN-8 ..... 30.

### Shiva Corporation

EtherGate ..... 1,831.  
NetBridge ..... 339.  
NetSerial ..... 279.  
TeleBridge ..... 348.

### TOPS

Flash Card (TOPS Dos) ..... 158.  
TOPS FlashBox ..... 109.  
TOPS Repeater ..... 119.

## Miscellaneous

### Aapps Corporation

Micro TV ..... 269.

## Abaton

InterFax 12/48 ..... 259.  
InterFax 24/96 ..... 418.  
Quickstep Page Printer ..... 3,295.

## American Power Conversion

UPS 110SE ..... 268.



**MacSprint ..... \$249.**

## Orchid

Increases microprocessor throughput by an average of 22% to a max of 30% by eliminating wait states. Installs in 5 minutes.

## Dayna Communications

Dayna Talk Connector ..... 99.  
DaynaFile - Single Drive  
Df0100 (360k) ..... 498.  
Df0200 (1.2Mb) ..... 605.  
Df0300 (720k) ..... 605.  
Df0400 (1.44Mb) ..... 685.

### DaynaFile - Dual Drive

Df0102 (360k/1.2Mb) ..... 729.  
Df0103 (360k/720k) ..... 729.  
Df0104 (360k/1.44Mb) ..... 725.  
Df0204 (1.2Mb/1.44Mb) ..... 898.

### Kurta - Is/ADB Tablets

Cordless 4 Button Cursor ..... 64.  
8.5" x 11" (w/Stylus) ..... 254.  
12" x 17" (w/Stylus) ..... 384.  
12" x 17" (w/Stylus) ..... 624.

### NEC CD ROM Drive

Battery Pack ..... 68.  
Intersect Cdr-35 ..... 495.

### Orange Micro

Grappler C/Mac/GS ..... 78.  
Grappler LQ, LS ..... ea. 102.  
Grappler Mac LX ..... 129.  
Mac 286 NuBus Card ..... 1,099.  
Mac 86 NuBus Card ..... 498.

### Orchid Technology

Orchid Fax Modem ..... 446.

### PCPC (8mm Tape Backup)

Jetstream ..... 4,725.

### Qume

Crystal Print Publisher ..... 2,950.

### Summagraphics Bit Pad Plus

12" x 12" Tablet - ADB ..... 315.

## ENTERTAINMENT

### Access Software

World Class Leader Board ..... 25.

### Accolade

4th & Inches ..... 27.  
FastBreak ..... 27.  
Grand Prix Circuit ..... 27.  
Hardball ..... 26.  
Mean 18 ..... 26.

### Activision

Cosmic Osmo ..... 41.  
Manhole ..... 29.  
Manhole CD Version ..... 35.

### Addison Wesley

The Hobbit ..... 26.  
Fellowship of The Ring ..... 26.  
The Shadows of Mordor ..... 26.  
The Crack of Doom ..... 26.

### Brøderbund

Ancient Art of War ..... 26.  
Ancient Art of War at Sea ..... 26.  
PlayMaker Football ..... 32.  
Shufflepuck Cafe ..... 23.  
SimCity 1.1 ..... 29.  
SimCity Color ..... 48.  
Star Wars ..... 24.  
Where In Europe Is Carmen Sandiego? ..... 29.  
Where In The U.S.A. Is Carmen Sandiego? ..... 29.  
Where In The World Is Carmen Sandiego? ..... 29.



# Complete solutions for PERIPHERALS 1-800-248-0800

The Mac  
Zone

Ask about  
product money  
back guarantees



## Check Mark Software

**MultiLedger** combines G/L, A/R, A/P & Inventory into a single integrated program, w/invoices, statements & financial reports. **Cash Ledger**: entry level G/L program. **Payroll**: handles 1 to 1,000 employees, can be integrated with Cash Ledger, MultiLedger or used as a stand alone program.

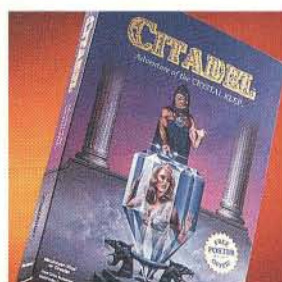
..... see listings



## Software Innovations

Lets you open any document from the Finder, even if you don't have the application that created it. Assign documents to any compatible application by their creator or filename extension. Supports the Desktop Manager. Rated in 200 best Mac Products and awarded 4 1/2 mice by MacUser.

HandOff ..... CALL



## Postcraft International

Fantasy role playing climbs to new heights of challenge & excitement while exploring the most graphically realistic, 3-dimensional maze in the depths of the CITADEL. Sound & animation plus 60 animated monsters will keep any player on the edge of their seat.

Citadel ..... \$32.



## Fuji Disks

Receive a FREE Fujicolor Quicksnap camera with every 3 boxes ordered. Tested & certified 100% error free, complete with Fuji's ltd lifetime warranty. 10 pack DS or HD disks available in standard beige or rainbow pack (5 different colors, screen cleaning cloth included & sturdy disk storage case).

DS or HD Disks ..... see listings

## Bullseye Software

Ferrari Grand Prix ..... 32.  
P-51 Mustang Flight Sim. .... 31.

## Casady & Greene

Crystal Quest 2.2 ..... 25.  
...w/Critter Editor ..... 40.

## Centron

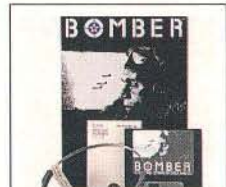
Casino Master B & W ..... 44.  
Casino Master Color ..... 49.

## Data East

Super HangOn ..... 26.

## Discovery Software

Arkanoid ..... 26.



Bomber ..... \$25.

## Inline Design

Explosive WWII action. Digitized sound, animation, and a crew that talks back. Requires 1 Mb Mac, hard disk & HyperCard.

## Electronic Arts

Bard's Tale ..... 31.  
Chessmaster 2100 ..... 32.  
Chuck Yeager's A.F.T. .... 31.  
Might & Magic II ..... 38.  
Panzer Battles ..... 28.  
Patton Vs Rommel ..... 14.  
Starflight ..... 39.

## Infocom

Arthur: Quest for Excalibur .. 25.  
Quarterstaff ..... 28.

## Inline Design

Bomber (w/Headphones) .... 25.

## Lucasfilm

Pipe Dream ..... 28.

## Mediagenic

Shanghai ..... 19.

## Micro League Sports

Micro League Baseball II ..... 35.

## MicroProse

Pirates! ..... 35.

## Microsoft

Flight Simulator 1.02 ..... 32.

## Miles Computing

Fool's Errand ..... 31.  
Harrier Strike Mission II ..... 31.  
Puzzle Gallery ..... 26.

## Mindscape

Aussie Joker Poker ..... 19.  
Balance of Power 1990 ..... 29.  
Colony ..... 29.  
Crossword Magic ..... 29.  
Deja Vu ..... 29.  
Deja Vu II ..... 29.  
Gauntlet ..... 29.  
Shadowgate ..... 29.  
Trust & Betrayal ..... 29.  
Uninvited ..... 29.

## Origin Systems

Autoduel ..... 23.  
Moebius ..... 23.  
Ogre ..... 16.  
Space Rogue ..... 30.

## Postcraft International

Citadel ..... 32.

## Premier Technology

NetTrek ..... 34.  
Strategic Conquest 2.0 ..... 34.

## Shodan

Leprechaun ..... 29.

## Silicon Beach Software

Apache Strike 1.1 ..... 24.  
Beyond Dark Castle ..... 24.  
Dark Castle ..... 22.

## Sir Tech

Wizardry ..... 35.

## Software Toolworks

Cribbage King/Gin King ..... 38.  
Hunt for Red October ..... 31.  
Life & Death ..... 31.

## Sphere

Falcon 2.2 ..... 30.  
Gato 1.4 ..... 26.  
Pt-109 ..... 26.  
Solitaire Royale ..... 19.  
Tetris (Black & White) ..... 19.  
Tetris (Color Version) ..... 22.  
Welltris ..... CALL

## Spinnaker

Sargon IV ..... 26.

## Strategic Simulations, Inc.

AD&D: Pool of Radiance .... 32.

## Strategic Studies Group

American Civil War ..... 30.  
Halls of Montezuma ..... 30.

## Three Sixty

Sands of Fire ..... 34.  
Warlock ..... 28.

## Toyogo, Inc.

Nemesis Go Master ..... 47.  
Nemesis Joseki Tutor ..... 28.

## XOR Corporation

Lunar Rescue ..... 33.  
Mac Racquetball ..... 36.  
MacCourses ..... 19.  
MacGolf ..... 32.  
MacGolf Classic ..... 52.  
NFL Challenge ..... 54.  
Pro Challenge ..... 28.  
Road Racer ..... 38.  
TaskMaker ..... 27.



Micro League Baseball II ..  
..... \$35.

## Micro League Sports

Hall of Famers and All-Stars alike take the field on your own baseball diamond, and you're the manager!

## EDUCATION

### Bible Research Systems

The Word  
(KJV, NIV, NKJV, RSV) ..... 164.  
The Word Add-On ..... 65.  
The Word Verse Search ..... 78.

### Bright Star Technology

Alphabet Blocks ..... 29.  
Talking Tiles ..... 25.

### Braderbund

Calculus ..... 58.  
Geometry ..... 58.  
Physics ..... 58.  
Type! ..... 18.

### Carina

Voyager 1.2 ..... 88.

### Davidson & Associates

Math Blaster ..... 26.

### First Byte

Dinosaur Discovery Kit ..... 26.

### Great Wave Software

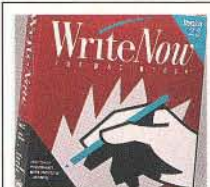
KidsMath ..... 26.  
KidsTime ..... 25.  
Number Maze ..... 26.

### Learning Company

Math Rabbit ..... 31.  
Reader Rabbit 2.2 ..... 31.

### Nordic

Alphabetizer ..... 27.  
BodyWorks ..... 27.  
ClockWorks ..... 27.  
CoinWorks ..... 27.  
EarthWorks ..... 27.  
FlashWorks ..... 27.  
Lemonade Stand ..... 27.  
MacKids Preschool Pack ..... 36.  
Naval Battle ..... 27.  
Preschool Disk 1 ..... 27.  
Preschool Disk 2 ..... 27.  
Turbo Math Facts ..... 27.  
Word Quest ..... 31.  
Word Search ..... 27.



WriteNow 2.2 ..... CALL

### T/Maker

1,400,000 word thesaurus, 135,000 word spell checker, direct MS Word compatibility. Still the easiest & fastest word processor.

### Penton Overseas

VocabuLearn/ce  
French Level 1 ..... 29.  
French Level 2 ..... 29.  
German Level 1 ..... 29.  
German Level 2 ..... 29.  
Italian Level 1 ..... 29.  
Italian Level 2 ..... 29.  
Japanese Level 1 ..... 35.  
Japanese Level 2 ..... 35.  
Spanish Level 1 ..... 29.  
Spanish Level 2 ..... 29.

### Personal Training Systems

Learn88 Training Series  
A1 Beginning Illustrator ..... 36.  
A2 Int. Illustrator ..... 36.  
A3 Creating Special FX ..... 36.  
A4 Prec. Drawing Tech. .... 36.

### MacTeach Training Series - The Basics

B1 Plus & SE w/out HD ..... 36.  
B2 Plus & SE w/HD ..... 36.  
B3 020 & 030 w/HD ..... 36.  
B4 Beyond the Basics ..... 36.

### Learn Freehand Training Series

FH1 Beginning Freehand ..... 36.  
FH2 Int. Freehand ..... 36.  
FH3 Creating Special FX ..... 36.  
FH4 Prec. Drawing Tech. .... 36.

### Learn FileMaker Training Series

FM1 Beginning FileMaker ..... 36.  
FM2 Int. FileMaker ..... 36.  
FM3 Advanced FileMaker ..... 36.  
FM4 Tips & Techniques ..... 36.

### HyperEasy Training Series

H1 Using HyperCard ..... 36.  
H2 Creating Cards/Stacks ..... 36.  
H3 Basic Scripting ..... 36.  
H4 Advanced Scripting ..... 36.

### LearnPersuasion Training Series

LP1 Beg. Persuasion ..... 36.  
LP2 Int. Persuasion ..... 36.  
LP3 Creating Templates ..... 36.  
LP4 Creating Artwork ..... 36.

### MasterWorks Training Series

M1 Database & Form Let. .... 36.  
M2 Advanced Database ..... 36.  
M3 Spreadsheets ..... 36.  
M4 Word Processing ..... 36.

### PageTutor Training Series

P1 Beginning PageMaker ..... 36.  
P2 Int. PageMaker ..... 36.  
P3 Tips & Techniques ..... 36.  
P4 Advanced Features ..... 36.

### LearnWord Training Series

W1 Beginning Level ..... 36.  
W2 Intermediate Level ..... 36.  
W3 Advanced Level ..... 36.  
W4 Additional Features ..... 36.

### Excelerate Training Series

XL1 Beg. Spreadsheets ..... 36.  
XL2 Int. Spreadsheets ..... 36.  
XL3 Adv. Spreadsheets ..... 36.  
XL4 Creating Bus. Graphs ..... 36.  
XL5 Building Databases ..... 36.  
XL6 Beginning Macros ..... 36.  
XL7 Advanced Macros ..... 36.  
XL8 Macros for Excel 2.2 ..... 36.  
XL9 What's New for 2.2 ..... 36.

### Simon & Schuster

Typing Tutor IV ..... 29.

### Software Toolworks

M. Beacon Teaches Typing .. 32.

### Spinnaker

Typing Made Easy ..... 25.

### True BASIC, Inc.

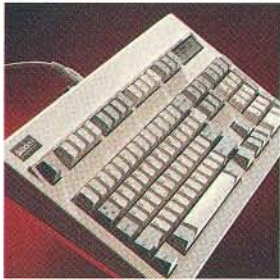
Algebra ..... 33.  
Arithmetic ..... 33.

**MBG**  
30-60 day money back  
guarantees on many items. Ask!

**OVERNIGHT DELIVERY**  
\$3 PER ORDER



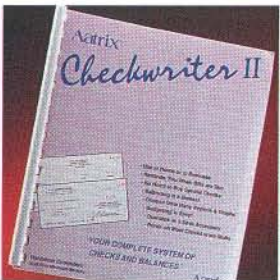
# Complete solutions for ACCESSORIES 1-800-248-0800



## Datadesk

The Mac-101 keyboard is for all Mac users who use their keyboard for more than just typing. The 101 key layout, positive response keys and free MasterStrokes keyboard macro software take you beyond the limits like never before. French, Spanish & German versions also available.

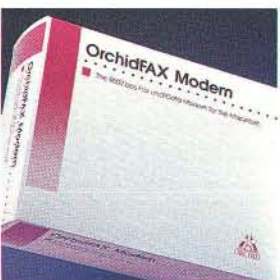
**Datadesk Mac 101 Keyboard .....\$135.**



## Aatrix

Prints on nearly any checkform, even prints on personal checks with Image-Writer or Laser-Writer. CheckWriter II reminds you of your bills due each morning. (You'll never pay a late fee again!) Also print envelopes or mailing labels from the built-in address database. 1990 Eddy Nominee.

**CheckWriter II .....\$32.**



## Orchid

The 9600 bps Fax and Data Modem for the Macintosh. Sends and receives faxes at 9600 bps for fastest transmission, and connects at 9600 bps with OrchidFAX and AppleFax modems. Package comes complete with BackFAX software and letter quality fonts for better looking faxes.

**OrchidFAX Modem .....\$446.**



## XOR Corporation

The world has plunged into depression and devastation...the once mighty Kingdom is no longer. You must restore order and prosperity to the Kingdom, but you have no experience. To gain help, find the TaskMaker, and with his guidance and your courage, the Kingdom might be saved!

**TaskMaker .....\$27.**



## Cricket Software

Cricket's answer to the need for sophisticated precision object oriented graphic tools for the Macintosh computer. Effectively capitalizes on the capability of PostScript printers. Includes enhanced text handling features, color, precise control, and advanced PostScript special effects.

**Cricket Draw .....\$167.**

Calculus .....	33.
Discrete Mathematics .....	33.
Pre-Calculus/Trig. ....	33.
Probability Theory .....	33.
TrueSTAT .....	33.
Combo Packs w/Workbook	
Algebra Combo Pack .....	39.
Calculus Combo Pack .....	39.
Pre-Calculus Combo Pack ..	39.

## MUSIC

**Ars Nova**  
Practica Musica ..... 69.

**Bogas Productions**  
Studio Session ..... 44.  
Super Studio Session ..... 65.  
Brass, Country, Heavy Metal,  
Sound Effects, String Quartet  
..... each 13.

**Braderbund**  
Jam Session ..... 28.

**Coda**  
Finale 2.0 ..... 558.  
Mac Drums ..... 31.  
MusicProse ..... 169.  
Perceive ..... 49.

**Electronic Arts**  
Dix Music Const. Set ..... 82.  
Deluxe Recorder ..... 98.

**Farallon**  
MacRecorder 2.0 ..... 162.

**Great Wave Software**  
ConcertWare Plus MIDI ..... 108.

**Mark of The Unicorn**  
Professional Composer ..... 389.  
Professional Performer ..... 395.

**Passport Designs**  
Click Tracks ..... 309.  
MasterTracks Jr. .... 89.  
MasterTracks Pro 4.0 ..... 355.  
MIDI Interface ..... 79.  
MIDI Transport ..... 309.  
Note Writer II ..... 320.

**Primera Software**  
Different Drummer ..... 58.

**Resonate**  
Listen 2.1 ..... 61.

## ACCESSORIES

**Abaton**  
Pro Point ADB (SE & II) ..... 79.

**Acco**  
Disk Page (2 Pages) ..... 6.

**Addison Wesley**  
Inside Macintosh, Vol. 1 ..... 21.  
Inside Macintosh, Vol. 2 ..... 21.



**Business Sense .....\$268.**

**Digital, etc.**  
Integrated accounting package. Gen. Ledger, Accounts Receivable, Accounts Payable, Invoicing, Payroll, Budgeting & Reporting.



Where savings are huge and advice is free.

**1-800-248-0800**

Intl: (206) 883-1975 Canada: 800-248-0344 FAX (206) 881-3421

Inside Macintosh, Vol. 3 ..... 18.  
Inside Macintosh, Vol. 4 ..... 21.  
Inside Macintosh, Vol. 5 ..... 23.  
Inside Macintosh, X-Ref ..... 9.  
Macintosh Programming  
Secrets ..... 19.

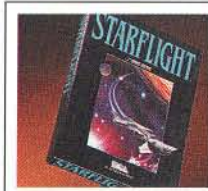
**Advanced Gravis**  
MouseStick ..... 64.  
MouseStick (ADB) ..... 79.

**Altra**  
Felix ..... 125.

**Apple**  
HyperCard 1.2 ..... 39.  
MacTerminal ..... 99.

**Toner Cartridges**  
LaserWriter II Series ..... 99.  
LaserWriter Plus Series ..... 96.

**Avery Labels**  
Address Labels  
2.5" x 15/16" (3000) White .. 12.  
3.5" x 15/16" (1000) White ... 5.  
3.5" x 15/16" (3750) White .. 13.  
3.5" x 15/16" (500) Clear ..... 13.



**Star Flight .....\$39.**

**Electronic Arts**  
Boldly go where no game has gone before, into the most far-reaching outer space adventure ever. Over 800 worlds to explore.

**Diskette Labels**  
2.75" x 2.75" (250) White ..... 14.  
Mac Disks (630) ..... 29.  
3.5" (80) Color Coded ..... 4.

**File Folder Labels**  
3.5" x 7/16" (1000) Asst ..... 7.

**Laser Printer Labels**  
1" x 2-5/8" (3000) White ..... 16.  
1.5" x 4" (1400) White ..... 18.  
1/2" x 1.75" (2000) ..... 7.  
Laser Transparencies (50) .. 22.  
Round 1.5" (300) White ..... 7.

**Bantam Books**  
Illustrator 88 Handbook ..... 19.  
Mastering Wingz ..... 21.  
HyperCard Handbook ..... 22.

**Datadesk**  
Hyper Dialer ..... 24.  
Mac 101 Keyboard ..... 135.

**Datashield**  
MacDirector ..... 79.

**Ergotron**  
MacTilt ..... 68.  
Mouse Cleaner 360 ..... 9.

**Fuji Disks**  
Double Sided (800k)  
10 Pack ..... 13.  
Rainbow 10 Pack ..... 13.  
Bulk (Units of 50) ..... each 70.

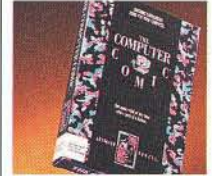
**High Density (1.44 Mb)**  
10 Pack ..... 22.  
Rainbow 10 Pack ..... 25.  
Bulk (Units of 50) ..... each 2.10

**Fujitsu**  
800k Disk Drive ..... 159.

**Golden Ribbons**  
Multi Colored ..... 7.  
Black ..... 3.

**Goldstein & Blair**  
Macintosh Bible ..... 19.  
w/ Book Disk Combo ..... 26.

**Kalmar Designs**  
Teakwood Disk File Cabinet  
135 Disks ..... 29.



**The Computer Comic . \$17.**

**Keyboard Comedy**  
Outrageous jokes for your computer. This desk accessory makes comic relief available any time of the day at the push of a button.

45 Disks ..... 14.  
90 Disks ..... 21.

**Kensington Microware**  
Apple Security Kit System ... 34.  
Dust Cover Mac SE ..... 8.  
Mac II Stand w/Cables ..... 64.  
Super Base ..... 33.  
System Saver Mac ..... 64.  
Tilt Swivel ..... 21.  
Turbo Mouse ..... 108.  
Universal Printer Stand ..... 15.

**Keytronics Keyboard**  
Mac Pro Kb-105 ADB ..... 125.

**Kraft**  
QuickStick (512k & Plus) ... 39.  
QuickStick ADB ..... 49.

**Lynx**  
Turbo Trackball ADB ..... 58.

**Mac Packs**  
Gray, Navy, or Wine  
ImageWriter Bag ..... 45.  
Mac Plus/SE Bag ..... 55.  
Mac SE Bag Xt (Extended  
Keyboard) ..... 69.

**Mac Zone**  
7 Outlet Noise & Surge  
Protector ..... 24.  
Mouse Pads ..... each 6.  
SCSI Tester ..... 39.  
Mac Tool Kit Mac w/Grounding  
Strap ..... 15.

**Maxell Backup Tapes**  
150 Mb Tapes ..... 24.  
60 Mb Backup Tape ..... 19.

**Microlytics**  
Personal Organizer w/Mac  
Advantage ..... 92.

**Microsoft Press**  
Excel In Business for 1.5 ..... 20.

**Mobius**  
Fanny Mac ..... 59.

**MSC Technologies**  
A+ Mouse (512k & Plus) ... 58.  
A+ Mouse ADB ..... 75.

**Portfolio Systems**  
DynoDex Address Book ..... 88.

**Sony Backup Tapes**  
DC 2000 40 Mb. Tape ..... 19.  
Qd-600a 150 Mb. Tape .... CALL

**Sony Disks**  
Double Sided (800k)  
10 Pack ..... 13.  
Bulk (Units of 50) ..... each .79

**High Density (1.44 Mb)**  
10 Pack ..... 22.  
Bulk (Units of 50) ..... each 1.80

**Star Forms Computer Paper**  
Pro Print 8.5 x 11 20# White  
Laser Bond 500/Ream ..... 7.  
Pro Print 9.5 x 11 20#  
Kleenedge Bond 1000/Box 18.  
Pro Print 9.5 x 11 20#  
Kleenedge Bond 500/Pac .. 10.

**Targus Bags**  
Black, Gray, Navy, or Wine  
Deluxe for Extended Kybd ... 68.  
ImageWriter (Black only) .... 45.  
Mac/SE Bag (Black only) .... 54.  
Ilcx/Icix Bag ..... 78.



# MULTIMEDIA

## IS IT REAL?

Juggling media  
types for maximum  
impact—multimedia's  
promises and  
problems

**B**uzzwords intrigue but rarely inform. The term *multimedia*, for instance, is bandied about as though we all agree on its definition and implications. The truth is, consumers, developers, and computer pundits have stretched its meaning until there is little left beyond hyperbole and generalizations.

To find out what lies behind the hype, we interviewed pioneering multimedia developers. We looked at the available production tools and publishing options. Finally, we drew up a definition of multimedia as it applies to the Macintosh.

In the course of our research, we listened to pie-in-the-sky visionaries, sympathized with frustrated developers, and talked to everyone from computer retailers to high-school teachers. We catalogued the tools available to multimedia producers (see "Multimedia Production Tools"). Finally, after juggling the pieces of the puzzle, it became clear that asking whether or not multimedia computing lies in our future is a bit like our grandparents' wondering whether or not movies should have sound. It's not a question of if, but when.

by **Suzanne Stefanac and Liza Weiman**





MICHAEL JEWELL





Using his solar-powered multimedia lab, ecologist Mike Hamilton catalogs the wildlife of the James San Jacinto Mountains Reserve.

### Multimedia Defined

- Multimedia incorporates several media types—text, graphics, audio, animation, video—in a single computer document; sound and/or motion are integral to a true multimedia project.
- What distinguishes multimedia from film or video is interactivity. Watching a detective movie is one thing, solving the mystery is another. Computer-based multimedia allows the user to determine the pace and path through ever-branching options.

▪ Multimedia developers must be much more than programmers, video producers, and audio wizards. They must also be interface designers able to knit several media into easy-to-navigate documents.

### Where Is the Knowledge Navigator?

Apple touts the Macintosh as a multimedia machine, primed for easy integration of multiple media. As a teaser, John Sculley often shows a video about the Knowledge Navigator—a simulated notebook-size computer that talks and listens, fetches clips from video databases, and even schedules appointments for its lucky owner. But as much as we'd like to believe that

voice-activated electronic butlers are in our near future, it just isn't true.

The problem, as usual, lies not in the vision, but in the technology. Before full-motion video can be delivered over networks and real-time animation is available in 32 bits, we'll need CPUs and graphics processing capabilities many times faster than those currently available. Storing these memory-hungry multimedia files is another problem in search of a solution. And although Articulate Systems' Voice Navigator looks promising, voice-recognition technology for personal computers is still in its infancy—a fact even Apple tacitly admits.

In a recent Desktop Media campaign aimed at the business community, Apple featured a multimedia presentation of a cartoon car with propellers—the HeloCar—that included page layout, 3-D graphics, 35mm slides, and overhead transparencies. Screens with HyperCard-like buttons let you choose between an animation of the car flying, schematic drawings of the interior of the engine, or dynamic cost breakdowns. What this slick presentation lacked was 32-bit color animation, full-motion video, and voice annotation.

### Other Platforms

While Apple is promoting the Macintosh as a platform for multimedia, other computer companies are pitching their own development schemes. Next, for instance, is attracting some first-rate developers (see "Multimedia on the Next"), and IBM's InfoWindows with TouchScreen Display and Sony's View System have been popular in the

## MULTIMEDIA PRODUCTION TOOLS

Products on this line are arranged according to the amount of time and money you must invest if you want to include sound, animation, or video in your multimedia documents. — Suzanne Stefanac



### Basic Authoring

HyperCard 1.2.5, Apple Computer, \$120



### Basic Animation

MacMovies, Lapis Technologies, \$99

Studio/1, Electronic Arts, \$99

VideoWorks II, MacroMind, \$295

VideoWorks II HyperCard Driver, MacroMind, \$99.95

### Basic Audio Input and Editing

The Voyager CD AudioStack,

The Voyager Company, \$99.95

MacRecorder, Farallon Computing, \$249



### Talking Agents

HyperAnimator, Bright Star Technology, \$199.95

interFACE, Bright Star Technology, \$499.95





corporate community for years. Intel's continued promise of affordable DVI (digital video interactive) standards might make the compression and playback of full-motion (30-frames-per-second) video a reality on the IBM PC—someday.

The problem with Intel's compression scheme is that although you might be able to play back compressed video on a personal computer, it takes a large, expensive computer to compress the data in the first place. Personal-computer owners can inexpensively play multimedia releases that were very expensive to produce. Just as with records or CDs, consumers can play them, but not make them.

Apple, in contrast, has stated publicly that its vision requires that the Macintosh be able to both make and play multimedia on the desktop. Apple believes that users should have the option to be both consumers and producers.

In keeping with this vision, HyperCard was Apple's early entry into the multimedia sweepstakes. Because it enables users to write their own simple interactive applications and because it can be used to access and control other media—CD ROM and videodisc players, for instance—HyperCard struck a chord. As HyperCard creator Bill Atkinson notes, "We were surprised at the way people jumped right in and started using HyperTalk. This was probably due to a pent-up demand for user programmability."

### The Multimedia Pyramid

Of course, even if Apple's vision becomes a reality, most people will

## Users should have the option to be both consumers and producers

probably encounter multimedia presentations in boardrooms and salesrooms, schools and training centers, museums and shopping-mall kiosks. Some people will learn to add a few sounds or short animations to presentations. Very few, however, will be in a position to invest the time and money necessary for creating truly professional multimedia projects. Multimedia production, particularly if video is involved, will still be in the hands of the few who have access to advanced technology. (For an overview of the costs involved in optical publishing, see "Be Your Own Producer.")

On the other hand, homemade videos are quite popular, and the fact that the quality isn't professional doesn't seem to matter to most people. Multimedia presentations are similar. For a small investment in time and money, you can incorporate text, graphics, and sound into your documents. For a little more money, you can add color, animation, and CD-quality sound. For still more money and time you can use digitized video still-frame pictures. For a lot more money you can include full-motion video. And at the highest end of the spectrum, you can incorporate real-time video complete with computer-generated text and graphic overlays.

The following profiles illustrate

some of the ways in which people have found multimedia to be a cost-effective solution to problems in their workplaces. (For a listing of multimedia production tools arranged loosely according to the time and money investments involved, see "Multimedia Tools," the table running along the bottom of these pages.)

### In-House Expertise

In a fast-changing world, keeping employees and customers up to date on technical information is a challenge many companies face. Multimedia-based training, because it can incorporate voice, music, animation, and interactive course work, has proven popular in many corporations.

Codex Corporation, a subsidiary of Motorola, is a data-communications and networking-services company that needed to find a way to effectively train its sales representatives, applications engineers, systems engineers, customer-service representatives, and customers in the basics of digital telecommunications technology.

Working with interactive multimedia developers Madeline Butler and Paul Raila, Codex produced Basics of Digital Voice Technology, an 8MB interactive HyperCard stack that replaces an eight-hour lecture-type course with a three- to four-hour interactive one.

Incorporating VideoWorks II animation, sounds digitized with MacRecorder, and animated characters produced with HyperAnimator, this interactive training course simulates a year in the life of a communications manager in a medium-size company.

"We chose to make it a simulation

#### Midrange Audio Input and Editing

Audiomedia, Digidesign, \$995  
Sound Designer, Digidesign, \$999

#### Midrange Authoring

ArchiText, BrainPower, \$395  
Course Builder, TeleRobotics International, \$395  
Guide, OWL International, \$295  
Interactive Teacher, American Intelliware Corporation, \$295  
SuperCard, Silicon Beach Software, \$199  
\*Plus, Spinnaker Software Corporation, TBA

#### Basic Video Digitizers

Xap Shot, Canon USA, \$799  
ComputerEyes, Digital Vision, \$249.95  
ComputerEyes Pro Color Digitizer, Digital Vision, \$450  
HyperVision, Pixelogic, \$195  
MacVision, Koala, \$400

#### Midrange Animation

MacroMind Director, MacroMind, \$695  
MacroMind Director Accelerator, MacroMind, \$195

#### Midrange Editing

\*Media Tracks, Farallon Computing, TBA

#### TV Window on Mac

MicroTV, Aaps Corporation, \$395  
\*BigTime TV, Hyperpress, TBA

\*Not shipping at press time.



with specific challenges," says lead designer Madeline Butler, "so that people would have an inherent motivation to finish the course without feeling pressure related directly to their own jobs."

Basics of Digital Voice Technology is currently running in over 30 sales and service centers nationwide, and Codex is developing an interactive stack-based course on ISDN (Integrated Services Digital Network). Having developed expertise while working on Basics of Digital Voice Technology, Codex is creating the ISDN project entirely in-house, using outside contractors only for the design of some of the graphics. This time the developers are adding a Computer-Eyes digitizer for capturing the images of real people, and they've added MacroMind Director to their toolbox for creating animations.

## Getting the Big Picture

Ecologist Mike Hamilton, resident director of a University of California ecological reserve for teaching and research, wanted to create an interactive ecological database both as a teaching aid and as a model for cataloging the natural world. In order to do so, he built a solar-powered multimedia lab.

Using a Mac II with an Apple 8-bit video board, a 40MB hard disk, a 20MB hard disk for backup, a Digital Vision ComputerEyes Pro Color video digitizer, a Pioneer 4200 videodisc player, and a 19-inch Sony multisync monitor, Hamilton has created the Macroscopic Ecology Laserdisc, a videodisc with over 25,000 still images, full-mo-

tion video sequences, and a 30MB HyperCard stack that contains detailed ecological information. His goal is to create a scientifically accurate and comprehensive database appropriate to the needs and levels of interest of groups from kindergartners to Forest Service professionals.

*"The important thing  
is that  
this doesn't have to be  
a big-budget  
enterprise"*

Using still-frame video cameras from Canon—the Xap Shot and RC701—and an 8mm Sony HandyCam camcorder, Hamilton and his crew of researchers take video images in the field of all relevant biological phenomena, including close-ups, full-motion sequences of animal behavior, and a highly structured 150-frame view of an area that becomes a *videomap*, a series of overlapping images that record everything a person can see while standing in a particular spot. Information about the location, format, date, time, and photographer of each image, as well as species information and ecological classification, is added back

at camp on HyperCard cards using a Macintosh Plus. Parabolic microphones and cassette tape recorders are used to capture animal sounds, and MacRecorder is used to digitize the sounds and add them to the stack back at the office.

Hamilton makes three to four videodiscs per year for a total of about \$3000. Working with Laser Edit, a post-production video service bureau in Los Angeles, he transfers his video in animation mode, one frame at a time, onto professional 1-inch-format videotape. This is then recorded on an Opticle Disc Corporation Mark II WORM drive to make a one-shot check disc that is LaserVision 2-compatible (playable on standard industrial players). This plastic disc cannot be replicated, but at \$300 per check disc it is an economical way to prototype the version of the Macroscopic that Hamilton will eventually produce in large quantities (see "Be Your Own Producer").

"The important thing," Hamilton says, "is that this doesn't have to be a big-budget enterprise. You can make multimedia happen on a Mac Plus with less than \$1000, once you own the basic equipment. This stuff is like Hollywood, it will absorb as much money and time as you're willing to put into it—your budget may go way beyond \$1000 if you don't plan carefully."

## Selling in the Twenty-First Century

The people at Live Marketing have been creating presentations for large corporations for the past 17 years. They've used slides, multiple slide projectors, video walls, lasers, and even puppets and holography to sell.

## MULTIMEDIA PRODUCTION TOOLS (continued)

## Video In and Out

NuVista (1MB, 2MB, 4MB RAM), Truevision,  
\$2995, \$4495, \$6495

ColorSpace II, Mass Microsystems, \$1995  
ColorSpace FX, Mass Microsystems, \$2995  
Genlock Converter, Julian Systems, \$999

\*Moonraker, Workstation Technologies, TBA

### Video In

ColorSnap-32, Computer Friends, \$1595  
FrameGrabber 324NC, RasterOps, \$1995  
Neotech Image Grabber 1.8,  
Advent Computer Products, \$1499  
Personal Vision, Orange Micro, \$2899  
PixelGrabber, Perceptics, Corporation, \$1720  
ProViz Video Scanner, Pixelogic,  
\$1100 black and white, \$1700 color  
ProViz Video Color Converter, Pixelogic, \$595  
Quick Capture, Data Translation, \$1245  
Color Capture, Data Translation, \$2995

### RGB and Composite Convertors

NTSC Converter for Macintosh II, Julian Systems, \$699  
NTSC Converter, Orange Micro, \$799  
VID/0 Box (NTSC and PAL versions), Truevision, \$995, \$1995  
D5-SCX Video Scan Converter, Dimension 5, \$1695

**Video Out (RGB and NTSC)**

ColorBoard 224, 232, 264,  
RasterOps Corporation, \$3995, \$2995, \$995  
SFX, RasterOps Corporation, \$1495



persuade, and communicate with people in the chaotic and competitive trade-show environment.

Now Bill Stimwich, vice president of marketing, has added Mac-based multimedia presentations to the company's portfolio. Using MacroMind Director as the basic design tool, he adds images created with Swivel 3D, Aldus Persuasion, MacDraw, and Canvas 2.0. He scans in 35mm slides with a Barneyscan color slide scanner and uses a flatbed Howtek scanner for color photographs. For certain digital-audio effects Stimwich uses MacRecorder, but the bulk of the sound track usually runs on a tape deck hidden within the booth, synchronized to the presentation running on a 37-inch monitor and a Mac II.

Stimwich's productions also include a live actor working in sync with the multimedia presentation, which runs repeatedly from five to six minutes throughout a trade show. Calling his work twenty-first-century slide shows, he uses animated effects including montages of photos, color animations, and visual magic to draw attention to his presentation subject.

For presentations projected onto screens, he feels that 8-bit color achieves the nearly photographic realism he requires. "There's nothing limiting about the Mac environment today. Right now, I can do everything I can ever imagine wanting to do, with readily available tools."

#### Access to Video Archives

What happens to that video clip after you've seen it on the evening news? Until very recently, at ABC News it

## MULTIMEDIA ON THE NEXT

**T**he Next machine incorporates several hardware and software features that are generating interest among multimedia developers. With its 25MHz 68030 processing unit, 8MB of RAM (expandable to 16MB), direct memory access (12 I/O processors), and digital signal processor (DSP), the Next is designed to capitalize on multimedia's need for enhanced speed, memory, data-storage, and sound capabilities.

The Next comes bundled with Mail, an electronic-mail application that lets you send voice messages over built-in Ethernet circuitry. FrameMaker, a desktop publishing program from Frame Technology Corporation, lets you add voice annotation to documents.

Developers like Metaresearch have created software and external peripherals that let users input and manipulate CD-quality sounds and

video images, taking advantage of the Next's DSP chip. Digital Ears consists of a sound utility plus hardware; it opens, plays, records, and saves sound onto SCSI disks or optical discs using a simple graphical interface. Digital Eye grabs still-video frames or sequences from laser disc players, still and full-motion video cameras, and other standard NTSC video sources. Files created with either product can then be included in documents and in other applications.

MediaStation, an application from Imagine, enables users to capture, store, and process images, animations, and sounds in an environment that allows several media to be accessed and retrieved at once. Storing data on optical discs allows visual archives, digital audio libraries, electronic storyboards, and desktop presentations to take advantage of high resolution visual and sound files.

went into storage; to see it again, you had to pay thousands of dollars for each minute of video footage. Then in late 1988 David Bohrmann and his team at ABC News Interactive began publishing videodiscs for the education market.

Bohrmann had been executive producer for ABC's coverage of the 1988 presidential election, so it made sense that ABC News Interactive's first release would be The '88 Vote, Cam-

paign for the White House. Subsequently, in tandem with distributor Optical Data Corporation, ABC News Interactive released the videodiscs AIDS, The Great Quake of '89, and Martin Luther King Jr. (including the entire "I Have a Dream" speech). In the works are Mission: The Moon, an overview of the Mercury, Gemini, and Apollo space flights; and The Powers That Be, a three-part project that will look at the Supreme Court, Congress,



#### High-End Animation

DQ-Animax, Diaquest, \$2995

\*Electric Image Animation System, Electric Image, TBA  
The Animation Stand, Linker Systems, \$7495



#### High-End Authoring

Authorware Professional, Authorware, \$8050



#### Videodisc Production Tools

HyperCard Videodisc Toolkit, APDA-Apple Computer, \$40

Interactive Video Design Toolkit, Electronic Vision, \$395, enhanced version \$495

Storyboarder, American Intellivare Corporation, \$495

The Voyager Video Stack 2.1, The Voyager Company, \$99.95

#### Voice Annotation

\*Voice Navigator, Articulate Systems, TBA

\*Voice Navigator XA, Articulate Systems, TBA

#### Videodisc Authoring

Mentor/MacVideo, Edudisc, \$695

Video Builder, Telerobotics International, \$695

Video Builder Color, Telerobotics International, \$995

VideoDisc Writer, Whitney Educational Services, \$589

#### High-End Video Editing

AVID/1 Media Composer, AVID Technology,

\$50,000-\$85,000

Midas 1, Seehorn Technology, \$10,000

The Worx, Julian Systems, \$995

Quicksilver Videodisc Editing System (software),

Sundance Technology Group, \$3950

\*Not shipping at press time.



and the presidency.

Using HyperCard as a navigational front end, the ABC Interactive videodiscs enable teachers to create customized lesson plans that draw upon

the recorded video information. In a supportive move, Apple approved the use of its educational marketing funds for the purchase of videodisc players and monitors in schools.

### Development, Distribution, and Tools

The Voyager Company is striving to create a consumer market for interactive multimedia. Its products range from educational to entertainment,

## BE YOUR OWN PRODUCER

**C**D ROMs hold over 600MB per disc and are perfect for the distribution of multimedia applications that incorporate animations, graphics, audio, and text. For those who want to use full-motion video in their multimedia presentations, videodiscs are the preferred medium.

CD ROM pressing plants accept data on tape or hard disk. Mastering prices range from \$1500 to \$3000; replication and packaging prices depend on the total number of discs pressed. To produce from 1 to 500 discs, the price per disc starts at \$2.35. As the volume goes up, the price per disc goes down. A one-time-only disc for last-minute testing and fine-tuning, costs from \$500 to \$1000.

Videodiscs haven't had the impact on the consumer market that their cousins, VCRs, have, but they do offer high-resolution pictures and CD-quality sound. In addition, you can access the information on a videodisc in a random manner, and the disc doesn't wear out. Authoring systems such as HyperCard and SuperCard control the access to specific frames or sequences.

### Consumer versus Industrial

There are two kinds of videodisc players on the market. Consumer-level players are generally priced from \$400 to \$2000 and are designed primarily for viewing movies and listening to audio CDs. Industrial-level players, starting at \$1000, have access times three to four times faster than consumer-level players. They also have an RS-232C port for interfacing with a computer, and an internal microprocessor that allows programmed control of the videodisc.

### CLV versus CAV

Videodiscs can be recorded in two different ways. The CLV (constant linear

velocity) format provides up to 60 minutes per side of straight play on a 12-inch videodisc but has limited interactive capabilities. You don't have random access to the material (except on the most expensive industrial-level players), and you can't freeze frames or view material in slow motion, although you can still scan through the material sequentially and access it by chapter.

In contrast, CAV (constant angular velocity) format provides only half the storage capacity—30 minutes of full-motion video per side of a 12-inch disc—but it does offer interactivity. Depending on the player you're using, you can randomly access any of the 54,000 frames per side, view material in fast or slow motion, step through frames backwards or forwards one frame at a time, or freeze single frames. Because of this interactive capability, most computer-based multimedia applications use the CAV format.

Both CLV and CAV offer dual audio channels of 30 minutes per side, allowing you to record two audio tracks for the same video sequence. You can have narration in two languages or at two levels of difficulty, for instance, without having to rerecord identical video tracks.

### Interactive Programming

There are three levels of interactivity available to videodisc producers.

Level I lets you place automatic stops and chapters in your material during mastering. User interaction is limited to playing and searching for material using these markers, and input is usually limited to a remote-control device. Level I disks are meant to be played on standard consumer-level players.

Level II contains programming, located in one or more segments of the

second audio channel, that controls the videodisc. The data is preloaded into the videodisc player's memory. Normally Level II programming requires the use of an industrial player.

Level III videodiscs are completely controlled by an external computer. All the data necessary to do this is loaded into the computer from another source, not encoded on the videodisc itself. Since a computer is controlling the play, more-sophisticated levels of programming control video playback and user interaction. Level III allows more flexibility in programming, since the controlling information is not pressed onto the videodisc.

### Production Costs

While the main cost of any videodisc production is in scripting, shooting, and editing, the following is a list of the major postproduction costs.

**Premastering** You must deliver your material to a videodisc production facility on professional-quality videotape. This necessitates the use of a postproduction facility where, at the very least, you transfer your videotape to a 1-inch or 3/4-inch master at a cost ranging from \$150 to \$400 per hour.

**Producing a check disc** A one-time-only copy of your material for use in development of the final version, or for limited distribution, costs from \$300 to \$750 dollars, depending on your choice of a glass or plastic disc and of the manufacturing plant.

**Mastering the disc** Transferring your data to a glass master costs from \$1800 to \$7000 depending on turnaround time (faster costs more) and interactivity level (Level II costs more).

**Replicating the disc** Stamping out multiple copies of a mastered disc costs from \$9 to \$21 per side, depending on the total number of copies.



•  
•  
*Multimedia*  
•  
*is not just a buzzword*  
•  
*or a*  
•  
*set of products*  
•

from videodisc based to CD-audio based. Categorizing itself as analogous to a book publisher, Voyager adds supplementary material to videos and other work brought in from around the world, generates its own video productions, and distributes its own and others' works.

Voyager also sells videodisc and CD ROM drivers that can be converted to SuperCard, and the company supports videodisc models that the Apple-supplied drivers don't. Voyager sells The Box as well, an external device that provides computer control over some models of consumer videodisc players, enabling consumers to play interactive multimedia on the same player they bought to play movies.

Voyager's in-house staff of artists, writers, video producers, graphic artists, and HyperCard scripters collaborate with recognized authorities in specialized fields such as music or art history to produce the informative, visually appealing, and comprehensive products for which the company is known.

But making the products is one task, distributing them is another. Not yet comfortably positioned in computer software stores, video rental outlets, bookstores, or record stores, Voyager sells some of its titles in videodisc stores and most of them through direct sales. Voyager would like to see a new kind of store emerge, where you could buy multimedia hardware and software in one convenient place.

Another pioneer in the multimedia market is Warner New Media, which is producing innovative CD-audio and CD ROM products, including a three-CD set on Mozart's *The Magic Flute*.

#### Is It Realistic Yet?

Multimedia is not just a buzzword or a set of products. It isn't even really an emerging market niche. Rather, it is

the convergence of many new, and some not so new, technologies that promise to work together in new and meaningful ways. Multimedia promises to enrich our computing environment and bring multisensory, nonlinear approaches to our work and play. It is expensive, demanding, and potentially rewarding. The appropriate question may not be "Is multimedia real?" but rather, "Is it realistic?"

Until optical read-write technology is easily affordable and technically reliable and real-time schemes for compression and decompression of video become feasible, the storage and transportation of multimedia documents will continue to present problems. One frame of digitized full-motion video, after all, currently takes up 700K of space. Because full-motion video requires 30 frames per second, digitized video on the desktop remains unrealistic.

The amount of disk space and RAM a sound file takes up depends upon the sampling rate that it was recorded at. The sampling rate reflects the number of digital "snapshots" taken of a sound in one second. The higher the sampling rate used, the more room the recording will take up, and the higher the quality of the recording.

Eight-bit sound, adequate for

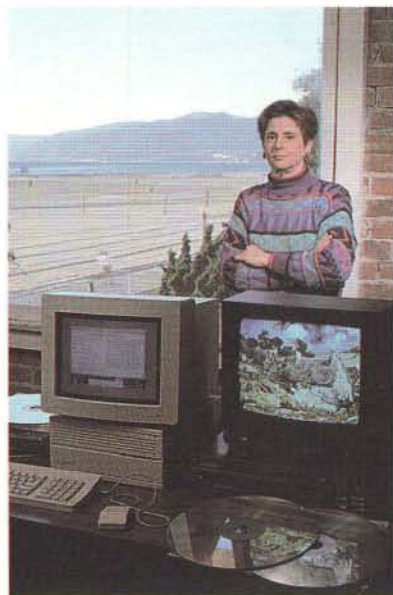
speech and some sound effects, requires up to 22K of RAM per second to play. CD-quality sound, in which 16 bits are assigned to each sample, is ideal for music and high-quality effects, but needs up to 85K of RAM per second. Until recently, these storage requirements have made it difficult to add more than brief sound bites to presentations. New software compression schemes now make it possible to compress sound files for storage, but they do degrade the quality of the recording on playback. The Audiomedia board from Digidesign uses a DSP chip and specialized driver software that allow real-time playback of CD-quality sound from a hard disk, making the Mac competitive with the Next machine in audio processing, and making it feasible for desktop developers to include long sound sequences in multimedia documents.

But even if you've digitized still frames of your videos and only used snippets of sound to save disk space, a five-minute multimedia presentation incorporating 3-D animation and 8-bit color could easily take up several megabytes. Traveling with your presentation means lugging an expensive and fragile hard disk around or investing in a removable system.

Worse still, if you want to show your presentation to more than a few people, you're going to have to spend the money to transfer it to videotape and rent either an expensive video-projection unit or a 37-inch monitor. Either way, you have to decide whether the increased interactivity, animation, and sound really make the added cost and setup time worth it.

Multimedia, however, *is* the wave of the computing future. The speed, storage, and price constraints that currently limit multimedia productions will largely evaporate as the technology evolves. While the task of producing full-fledged multimedia productions will continue to fall to dedicated developers, more and more individuals within the education, training, and business fields will undoubtedly invest the time and money to create lower-end multimedia presentations that will assist them in communicating with and persuading their target audiences. **M**

See *Where to Buy* for contact information.

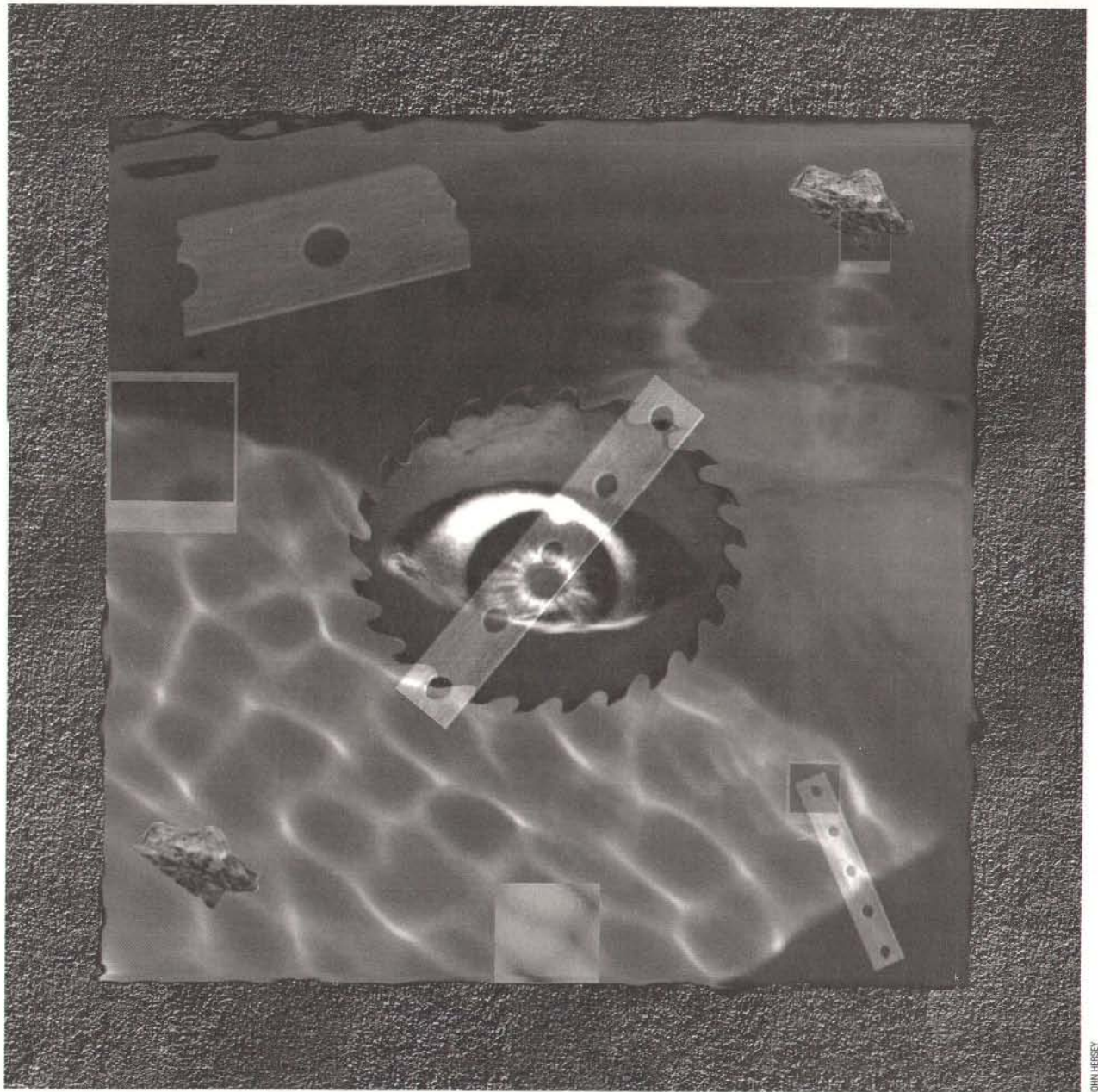


**Publisher Jane Wheeler of The Voyager Company recognizes that distribution is a crucial link in the development of a multimedia market.**

RUSS WIDSTRAND



# Gray-Scale



JOHN HERSEY



# Contrasts

**S**o you want to start using gray-scale scans for desktop publishing. You want to place black-and-white images directly in electronic page layouts and then print negatives on an imagesetter or laser printer. You want to speed up turnarounds while cutting stat-house and stripping bills. You want creative control: the power to paste birds into the sky, turn up the contrast till afternoon looks like sunset, paint out that telephone pole sprouting from the company president's head.

Provided the work you do is appropriate (see "What Exactly Is This Stuff Good For, Anyway?"), you can do all these things, and more. But to do them well, to do them economically, and to have any fun in the process, you'll need to get the right image-manipulation software.

For years now buying a gray-scale program has been, as we say in the computer game, a binary decision: Digital Darkroom, from Silicon Beach, or Letraset's ImageStudio. Recently two new programs have entered the picture, bringing with them powerful capabilities. One of the newcomers, Enhance, from MicroFrontier, will appeal to people who do technical image analysis as well as to publishers and artists.



**New gray-scale programs broaden the range of offerings, but sharp contrasts make for black-and-white decisions**

The other, Blue Solutions' PhotoPress, bills itself as a tool for no-nonsense production. This article compares all four of these programs to see which does what best.

For some people at either the high or the low end of Mac halftoning, the right software won't be a gray-scale program, or a commercial gray-scale program, at all, and we'll look at some other options worth considering. But first let's compare the old standbys to the digital debutants to see how gracefully the gray-scale graybeards have aged.

## Digital Darkroom

Digital Darkroom is a reasonably flexible, well-designed program. It offers some powerful features that until recently were uniquely its own. The interface is convenient and the manual is the best of those under review.

For the most part Digital Darkroom includes the same basic halftoning, retouching, and brightness and contrast controls as its forebear and longtime competitor, ImageStudio (see "Dots Nice!"). Some notable departures, however, do Digital Darkroom credit. Among the program's most powerful features are its Image and Paste controls, which enable you to re-

**BY JOE MATAZZONI**



strict the gray values that will be affected by painting, filtering, and even pasting operations.

The Image Controls work with the paint brushes and some of the filters, such as Sharpen and Blur. Suppose, for example, you have a picture with a relatively light sky and a foreground made up of darker shades. The Image Controls enable you to restrict touch-up tools so that you can paint clouds in the sky without affecting the mountains that form the horizon.

The Paste Controls work on a similar principle but include features useful in cut-and-paste work (see "Paste If"). In the example just cited, the Paste Controls could enable you to specify that pastes replace only the sky shades. You could then forget about painting clouds and simply drop in a dramatic sunset behind your mountains.

In the retouching department, Digital Darkroom's Stamp, which permits you to pick up a small section of an image and paint with it, is particularly useful. Photographs rarely contain smooth tones, and without this or a similar tool, touched up areas can look unnaturally flat. The only problem with Stamp is that the sampling area is severely limited; if you're not careful when using it to paint an area larger than the sample, the repeating stamp produces a grid pattern.

Digital Darkroom was the first Mac program to offer an autoselect feature—which searches for the edges of zones with similar gray values, so you can select objects in a picture without manually lassoing them. And it's still the only gray-scale program with an autotrace feature, which outlines ob-

jects and exports the outlines as Adobe Illustrator files.

Unfortunately, despite its many strengths, Digital Darkroom is a program in need of a major upgrade. It competes with ImageStudio, particularly since it has a \$100 price edge, but doesn't have what it takes to keep up with today's graphics programs (see "Gray-Scale Features").

Digital Darkroom's biggest limitation is that it's just not designed for the large files that 8-bit scans often yield. It's OK for working with 4-bit files or images destined for a laser printer. But for files larger than 750K or so—about the size of a 5-by-7-inch, 120-dots-per-inch, 8-bit scan—program speed slows to a crawl. You find yourself waiting around for tools to come back, while the screen labori-

ously refreshes. And the program has a tendency to crash.

Even if you're not going to use large files, you still have to have a lot of RAM to use Digital Darkroom. I tested these programs on a machine with 5 megabytes, and I wouldn't recommend that anyone do much real work in any gray-scale program without at least 4MB (8MB would be better). Still, the fact is that it's possible to work in ImageStudio with only 2MB.

Digital Darkroom holds everything in RAM, and it stores copies of the image in buffers in order to provide three levels of Undo. These buffers give the program its nice, interactive feeling, but they also eat up memory, the lack of which causes various program features not to function. To use all of Digital Darkroom's features re-

## WHAT EXACTLY IS THIS STUFF GOOD FOR, ANYWAY?

If you have a quality, glossy publication and want to use Mac gray-scale scans to cut down your stat-house bills, forget it. In the first place, I've never seen a side-by-side quality comparison between Mac and conventional halftones where the former looked better. And secondly, black-and-white halftones aren't that expensive; any money you might save on stripping and stat fees will probably be offset by the value of the time you've put into doing everything yourself.

If your work fits some or all of the following descriptions, however, digital halftoning can pay off.

- Your quality demands are moderate. Gray-scale scanning is a good application for newspapers, for example, where paper quality and halftone resolution are low. The *New York Times* uses scanned photographs "almost every day" in editorial illustrations, according to Rich Meislin, head of the graphics department.
- You want control over creative effects, such as cutting images from backgrounds or making double exposures. A typical application would be ad design. If you do ads for newspapers or other medium-quality purposes, you can do everything in-house, cut costs by saving on stripping and services like airbrushing or mask cutting, and probably shave your deadlines.
- You have a need for accurate, impressive mock-ups.
- You regularly work with damaged, amateur, or other poor-quality photographs. Gray-scale editors are superb at retouching blemishes and tears, and can do a lot to fix poorly exposed or printed pictures (see "Touch-up Tester").
- You don't require large sizes at high resolutions. Even with a beefy system, this isn't practical.
- A scanner can be a cost-cutting production tool even if you don't need creative effects—especially if the publication uses many photographs, quality is moderate, and you have more time than money.

For more insights on when scanning is and isn't appropriate, see "A Halftone Handbook," *Macworld*, October 1988.



### Paste If

Digital Darkroom's Paste Controls enable you to protect parts of the source or target images during pastes. In this example, the white portions of the Target bar indicate that pastes will not affect light areas in the target image. The line cutting across the graduated bar moves to reflect sampled values in the on-screen image, helping you to pinpoint values for masking. The Darken, Lighten, Blend, and Dissolve options provide control over the relative brightness of source and target images and also enable you to produce double exposures.

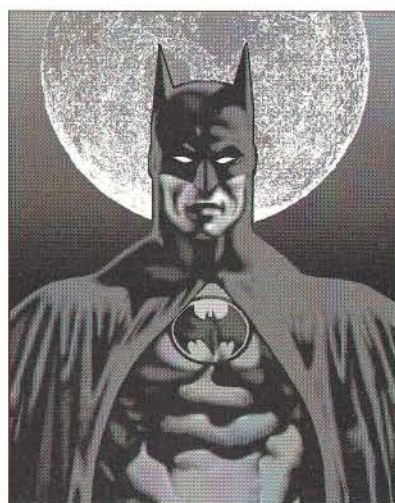


quires RAM equaling *four times* the size of the file, in addition to the size of the program (about 450K). So with 2MB free, you'd fall short if you tried to rotate a 500K file (rotation being a memory-intensive operation).

## ImageStudio

ImageStudio was the first Mac gray-scale program. It was ahead of its time, unique—but that was, then. Now Letraset, which has evidently been concentrating its energies on ColorStudio, hasn't upgraded the original in almost two years, and at this point there are only a few reasons for considering ImageStudio.

The program's gray-scale touch-up tools are very good (see "Batmoon"). Numerous controls that work with the fingertip (smudge), water drop (blur), charcoal (lighten, darken), and paint-brush tools enable you to change their responses in useful ways (see "State Your Preference"). ImageStudio is the only gray-scale program that lets you create new brush shapes and save them. To make things even more flexible, you can create your own tools: take a custom brush shape, give it the characteristics of a given tool (the rubber stamp, for example, which can



**Batmoon**

ImageStudio's touch-up tools are so fast and flexible that artists such as Pepe Moreno (who won first place for illustration in *Macworld's* art contest last year) have used it as a black-and-white paint package, later colorizing their images in other software.

From *Digital Justice*, © DC Comics 1990

# GRAY-SCALE FEATURES

	ImageStudio 1.5	Digital Darkroom 1.1	Enhance 1.0	PhotoPress 1.0	Image 1.22
Price	\$495	\$395	\$375	\$295	free
Minimum requirement	Mac Plus	Mac Plus	Mac II, 2 MB	SE/30 with 8-bit card, 2M	SE/30 with 8-bit card, 2MB
Limited by RAM or disk	disk	RAM	RAM	RAM	RAM
Shades displayed	102	128	256	256	256
Opens multiple files	○	○	●	●	●
Autoscroll	○	●	●	○	○
Text tool	○	○	●	●	●
Colorization features	○	○	●	●	●
Save: PICT/ EPS/TIFF	●/●/●	●/●/●	●/●/●	●/○/●	●/○/●
MacPaint/Compressed	●/●	●/●	○/○	○/○	○/○
Set print angle/frequency	●/●	●/●	●/●	○/●	○/●
Save angle/frequency	EPS only	○	○	○	○
Revert to Saved	RIFF only	PICT only	●	●	●
Number of zoom levels	9	6	11	8 <sup>1</sup>	8 <sup>1</sup>
<b>GRAY-SCALE EDITING</b>					
Bright, contrast sliders	●	●	●	●	●
Interactive gray-map graph	●	●	●	▶ <sup>2</sup>	▶ <sup>2</sup>
Alter selection only	●	○	●	●	●
Histogram/line profile	○/○	▶/○	●/●	○/●	●/●
<b>SELECTING AND TRACING</b>					
Autoselect/set sensitivity	○/○	●/▶ <sup>4</sup>	●/●	▶ <sup>5</sup> /●	▶ <sup>5</sup> /●
Edit selections	▶ <sup>6</sup>	●	●	●	●
Adobe Illustrator Autotrace	○	●	○	○	○
Masking buffer	○	○	●	▶ <sup>7</sup>	▶
Circle/square/polygon	○/●/●	●/●/●	●/●/●	●/●/●	●/●/●
<b>CUT AND PASTE</b>					
Blend images/control fade	▶/▶ <sup>8</sup>	●/●	●/●	●/○	●/○
Paste-if controls	○ <sup>9</sup>	●	●	○	○
Pastes scaled to fit selection	●	●	●	○	○
<b>PAINT AND RETOUCHING</b>					
Brush and airbrush	●	●	●	●	●
Create new brush shape	●	○	○	○	○
Control brush fade	●	○	●	○	○
Lighten and darken tools	●	●	●	○	○
Smudge/blur/sharpen tools	●/●/○	●/●/●	●/●/○	○/○/○	○/○/○
Set tool-response levels	●	▶	●	○	○
Fill graduate	●	○	●	○	○
Arbitrary orientation	●	○	○	○	○
Set Paint Bucket tolerance	▶	○	●	○	○
Graphic primitives	○	▶	●	▶	▶
Texture paint	○	●	○	○	○
Define custom fill	●	○	○	○	○
Paint only on selected grays	▶	●	●	○	○
<b>EFFECTS</b>					
Number of filters (approx.)	9	26	75	25	16
Manually/numerically rotate	▶/▶ <sup>3</sup>	●/●	●/●	○/▶ <sup>10</sup>	○/▶ <sup>10</sup>
Apply to irregular selections	▶	●	●	▶	▶
Scale selection	▶ <sup>6</sup>	●	●	▶ <sup>10</sup>	▶ <sup>10</sup>
Stretch/distort/skew	○/○/○	●/●/●	●/●/●	●/○/○	●/○/○
Rotate image	●	▶ <sup>11</sup>	▶ <sup>11</sup>	▶ <sup>11</sup>	▶ <sup>11</sup>

A ▶ indicates that a program includes the feature in question, but that it isn't well implemented or is limited in some way.

<sup>1</sup> No zoom out.

<sup>2</sup> Linear corrections only.

<sup>3</sup> No numeric data.

<sup>4</sup> Repeating command widens selection.

<sup>5</sup> Contiguous areas only; no adding to selection.

<sup>6</sup> Can't add to or subtract from rectangle.

<sup>7</sup> Save/Restore Selection marquee provides many functions of masking. Feature not operational with version 1 of PhotoPress.

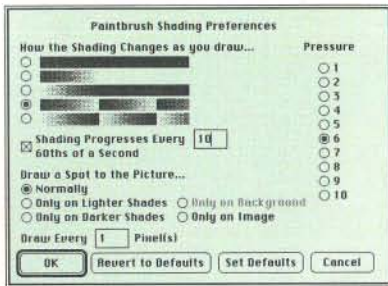
<sup>8</sup> Through Effects module; rectangular selections only.

<sup>9</sup> Will ignore shade set as Background.

<sup>10</sup> Rectangular selections only.

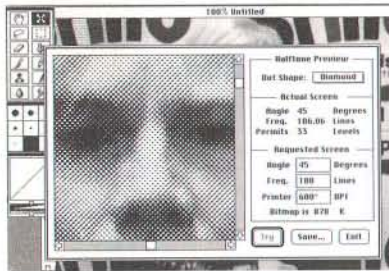
<sup>11</sup> Window doesn't rotate with image.





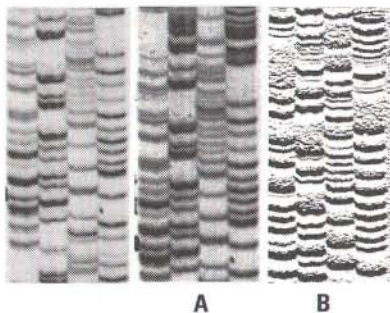
### State Your Preference

ImageStudio offers a Shading Preferences dialog for all its paint tools. Pressure controls the cycling interval of the fade-out brush options on the left, as well as the response of the smudge tool and charcoal. Shading Progresses Every — 60th of a Second controls a tool's flow (how fast a spot builds up). Draw a Spot to the Picture provides you with four options for crude gray masking. And Draw Every — Pixels causes the brush to work intermittently, which is nice for making patterns.



### Dots Nice!

ImageStudio's Halftone Preview calculates available angles, frequencies, and gray levels at a given printer resolution. At left, note the standard tools, including the gray-map graph (bottom). Editing the diagonal line changes the relationship of input values to output values.



### Bio Bar Code

Biologists such as *Macworld* contributing editor Charles Seiter use gray-scale software to help analyze X rays of DNA. For a clear reading, the film should look almost like a set of bar codes. Here, Enhance's Histogram Equalization (A) and Heavy Shadowing (B) filters make individual bands on the film stand out.

paint transparently), select the other preferences you want (such as shading and pressure), and save your choices as a new tool.

For some users, ImageStudio's strongest selling point is its virtual memory, which enables it to function within the confines of modest systems. Some people dispute that Letraset's scheme is true virtual memory (virtually virtual?), but in any case it allows you to substitute hard disk space for RAM when opening large files. Thus, if you're working on files of up to 1MB, ImageStudio is the only program that will enable you to get by with just 2MB of RAM, though you won't get full image undo. The system works well. When running under virtual, it's possible to make gray-scale and other overall changes on an entire image. Only a slice of the image as large as available RAM is visible for pixel editing, but there's a convenient mechanism for changing slices.

The real question is how long virtual memory will continue to be a unique advantage for ImageStudio. Apple has announced that System 7.0—which was due, last I heard, in late spring—will include virtual-memory features. This theoretically means that all programs—or at least all that have followed Apple's programming guidelines—will be able to work on large files. We'll see.

In an attempt to pump some new life into this product, Letraset has produced an Effects Module that comes free with ImageStudio now but costs \$99 for those who bought the program before August 1989. This module fills some obvious holes, such as the inability to scale or rotate selections, but the effects in the beta version I looked at aren't as flexible as similar features built into other programs. Scale and rotate, for example, work only with rectangular selections. Effects does include a clever halftone-preview utility that should be standard in all gray-scale programs' printing dialogs (see "Dots Nice!").

### Enhance

Well, I can't hold back any longer. Enhance is, simply, the only true second-generation gray-scale program. It does many things the others can't, and what the others can do, Enhance

can—for the most part—do better. It's a program with great parts, but its real strength is that all the parts work together to accomplish things no other gray-scale program is capable of doing.

I'm told Enhance started out in life as a technical image-analysis and -enhancement program, and if you're doing that kind of work don't even consider any of these other packages. In fact, according to contributing editor and molecular biologist Charles Seiter, whose day job involves enhancing autoradiograms, Enhance beats out Mac and IBM PC image-analysis programs that cost many times its price (see "Bio Bar Code"). But this technical bent shouldn't put off artists and publishers.

Both technical users and artists will appreciate Enhance's powerful image-masking features, for example. To work with just one part or even one tonal range of an image, you duplicate the image, select the part or values you want to work on, and fill the selection with black. This duplicate can now be a mask. Bring up Image Masking, and all painting, filtering, and gray-scale operations will affect only the black regions in the active mask (see "Paint It Black").

Enhance is the only program with masking buffers, but what makes its masking abilities especially useful are the program's unequalled tools for isolating and selecting just about whatever parts of an image you might want to mask. Enhance has two types of autoselect lassos (one shrinks to fit, the other expands like a typical magic wand); and you can precisely set the tolerance of both by telling them how many gray values above and below the touch point to include in the selection. You can also set an absolute threshold for selection—everything above or below value 100, say. Enhance's half-dozen brightness and contrast tools enable you to isolate a given gray value with relative ease. The Threshold tool, for example, has sliders that let you isolate a particular value or range in an image. Clicking on a button brings up a palette from which you can select any value—including black or even a color—to substitute for the selected range.

The rest of the brightness and con-



trast tools enable you to adjust an image's gray values much more precisely than do the gray-scale features in Digital Darkroom and ImageStudio (though Enhance also duplicates their controls). Particularly nice is the gamma filter, which lightens or darkens an image without chopping off the lows or highs. Moving the slider up or down gives you the same effect you would achieve if you could go into ImageStudio's or Digital Darkroom's gray-map graphs and keep drawing successively deeper smooth curves.

Just as the selection and gray-scale tools work hand-in-hand with the masking features, Enhance's gray-scale editors in turn are augmented by its histogram. Unlike Digital Darkroom's histogram, which provides a plot but no data, Enhance's histogram not only plots the distribution of values in an image but also displays numeric data about such things as the high, low, and mean values. A readout like this may seem superfluous—until you've used one. A histogram can be very useful when you're trying to identify and correct image problems. The histogram updates after filtering to show exactly how an operation changed the image (see "I Don't Know if It's Art, but I Know How Dark It Is").

Enhance's ruler is another of its simple but synergistic features. The ruler calculates the locations of points, the lengths of lines, and the angle between any two lines. Not too impressive. But add the program's ability to compare ruler information from one window with ruler information in another, and to use ruler information to control operations such as scale, rotate, and translate (move), and you start to see the possibilities.

Suppose you want to compare two aerial photographs of your town to see how it has changed in the last ten years, but the photographs were taken from different locations or different altitudes. No problem. Just load both images into memory in split-screen mode and then stretch ruler lines from First to Main streets in both windows. Now you can tell the program to scale the photographs so that the lines are the same size and to rotate the images till they have the same orientation. You could set points on the statue of George Washington in the

park, use the Translate command to align the photographs, and superimpose the new town over the old.

If you know the size of something in town, you can calibrate the images to that known quantity in any unit from microns to miles, and measure, say, the town's changing width over the years. You can calibrate the ruler so that it reads distances relative to any point you set, and you can even change the coordinate system so that it displays  $x$  and  $y$  coordinates according to four different orientations (top left to lower right, lower left to upper right, and so on).

Technical users who like Enhance's ability to compare and measure image elements will be even more impressed by its filtering features. Enhance comes with a selection of about 70 to 80 filters (depending on how you count them). But if those aren't enough, the program has a

unique dialog box that enables you to easily modify any of the filters or create new ones (see "Convolution Made Simple").

The prime advantage of developing a second-generation program is that you get to steal the best from everyone and then improve on it. That about characterizes Enhance's interface, which is filled with those nice touches that make a program a pleasure to use. Enhance has an excellent selection of tools, general operation is fast and clean, and the program is less expensive than either ImageStudio or Digital Darkroom.

### PhotoPress

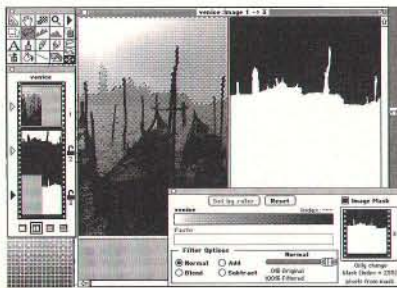
I agree wholeheartedly with Blue Solutions' gray-scale strategy. The idea was to produce an easy-to-use program at a reasonable price for the vast majority of potential gray-scale publishers who will never create photo



### Worlds within Worlds

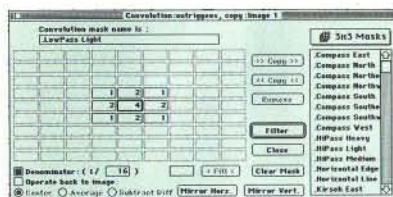
San Francisco illustrator Keith Baumann created this collage to help evaluate the programs under review. Because Enhance's skewing features produced curved edges, Baumann distorted the side and bottom panels using Digital Darkroom. He finished the rest of the job in Enhance, using features like autoselect (to remove Andy from his original background), smudge (to smooth the figure into its new surroundings), and various sharpening and brightness and contrast filters (to correct for blurriness resulting from scaling and skewing and to match the different images' values to each other). Since the inside of the picture frame was originally white, Baumann was able to crop the skewed, miniature image automatically using the Paste If controls (pasting only to white).





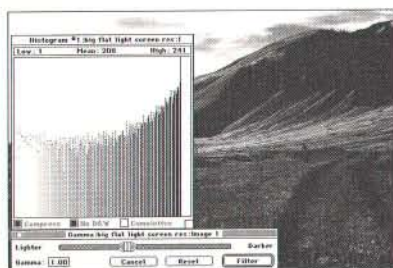
### Paint It Black

In Enhance, anything you can make black can be a mask. Here, the icon views at left show that masks have been created to isolate the foreground and sky. The dialog box (bottom) indicates that buffer 3 is the active mask channel, meaning that changes can now be made only to the sky. The controls on the left of the dialog box duplicate Digital Darkroom's gray-sensitive Paste Controls (see "Paste If").



### Convolution Made Simple

Enhance's Convolution mask lets you easily change filter parameters or make entirely new filters. The Copy button loads the parameters for any of the program's filters into the mask grid and associated control boxes. You then simply make any changes you want and copy the renamed filter back to the menu.



### I Don't Know if It's Art, but I Know How Dark It Is

Enhance's histogram can help to identify problems in a picture. In this example, the image is obviously dark (note the high mean value), but the darkest value is level 241, which means the scan contains no true black (level 256). The Gamma filter at bottom can be used to correct both flaws.

collages with double exposures and otherworldly filter effects. Offer a simple, moderately priced program with only the most useful features and nothing to confuse and scanner owners will beat a path to your door.

Unfortunately, the path to Blue Solutions' door is liable to remain relatively untrodden. Strategy has to be backed up by good tactical decisions, and this program embodies too many poor choices for me to recommend it, despite its price advantage.

PhotoPress does have a few things going for it. Like Enhance but unlike Digital Darkroom and ImageStudio, PhotoPress displays a full 256 gray values on screen. Most of the time this doesn't matter, but seeing exactly what's going on instead of getting a display that shows every other shade can be a big plus for detailed touch-up work. PhotoPress's most sophisticated feature is an option that saves selection marquees for later use. When I wrote this, the command to restore the marquee wasn't working, but the company promised that a fix would be out before this article.

Another nice PhotoPress feature is its Dynamic Masking, which works a bit like Enhance's Threshold filter, providing visual feedback so you can isolate a value or range of values precisely. When used with the magic wand, Dynamic Masking gives the same effect as an adjustable autoselect tool. Well, almost the same effect; Dynamic Masking with the magic wand is great at selecting one region, but you can't autoselect noncontiguous regions—a fairly common thing to want to do. PhotoPress has colorization features, and comes with some predefined palettes that turn a black-and-white photograph into a sepia or a duotone print (Enhance offers this as well).

So what can't PhotoPress do? For one thing, it doesn't offer very good control over gray values. It comes with a gray-map graph and sliders that look like the ones in ImageStudio and Digital Darkroom, but you can't draw curves on the graph, you can only slide the straight line around. PhotoPress comes with an automatic contrast-correction filter, but it's a canned, hit-and-miss proposition.

In the touch-up department,

PhotoPress lacks some of the other programs' most useful tools. Missing are smudge, lighten and darken (charcoal), as well as blur, which is key since it makes manual antialiasing possible. The paintbrush paints with any shape you want as long as it's a circle (albeit a circle of any size).

When it comes to printing options, PhotoPress offers only two halftone screen angles: 45 and 90 degrees. Big deal, you say, who prints at nonstandard angles? Answer: people who want optimal results from a laser printer. PostScript printers require nonstandard angles to be able to print at many frequencies. By limiting you to two halftone angles, PhotoPress drastically reduces the frequencies available on 300-dpi printers. So forget about trying different frequencies to get just the right trade-off of gray values and resolution.

PhotoPress is the only gray-scale program that thinks about image size solely in pixels. For example, it has a ruler feature, which is a nice thought, but why couldn't the program divide by 72 to give you measurements in inches? The Mac is a computer—it's supposed to compute things.

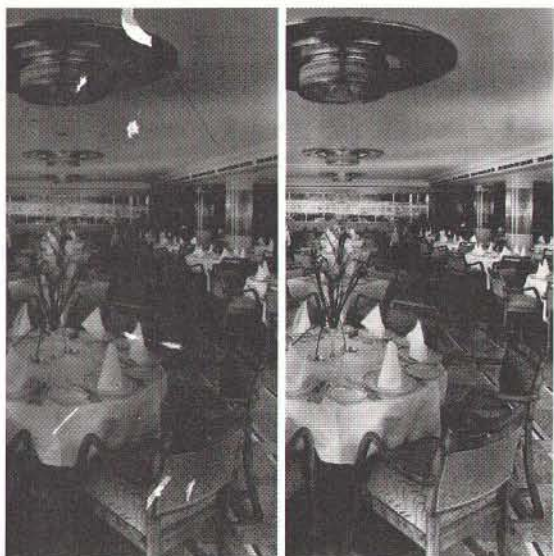
As part of this 72-dpi myopia, PhotoPress completely ignores all files' source resolution and sizing, indifferently treating all scans as if they were 72-dpi. If you open a 300-dpi, 5-by-7-inch scan in PhotoPress, it comes up on screen at more than four times its original size; an information box offers that the file is a 72-dpi image (aren't they all!) of dimensions  $x$  pixels by  $y$  pixels. That wouldn't be too bad, except that PhotoPress *can't zoom out*, which means the only place you can see your entire image is in the shrink-to-fit window, where many program functions don't work. If you happen not to know a scan's original dimensions and resolution, or if you want to scale the scan to a particular size, you have to dig out the old percentage wheel and calculator—or go to another program.

Overall, PhotoPress just feels half-baked and I can't quite picture the user it would serve well.

### The Big Picture

Which one should you get? The answer isn't as clear as it might seem. If





### Touch-up Tester

Macworld artist and designer Arne Hurty (see cover) helped evaluate the packages under review for their touch-up capabilities. After working with all the programs, he chose Enhance to complete the project shown here, for the following reasons: (1) The interface was more convenient. "Controls are easy to understand, and accomplishing things generally takes fewer steps." Strangely enough, Enhance is the only program in which drawing tools appear at the size they draw, even in enlarged views—a simple but significant plus. (2) Hurty found the ability to see all 256 gray levels on screen "critical," since touch-ups require so much work at the individual pixel level. (3) "It's faster, and it didn't bomb."

your needs are simple, don't waste your money on any of these programs. In "Gray-Scale Features" you will notice a public-domain program called Image. The code for this software actually forms the core of PhotoPress, and the only significant advantage I can see to the latter is that it comes with an illustrated manual and phone support. Image shares many of PhotoPress's limitations, but it will enable you to open and view gray-scale files, touch-up specks and scratches, and change brightness and contrast. Since PageMaker, QuarkXPress, ReadySetGo, and DesignStudio all offer brightness and contrast control for gray-scale images, Image will probably be most useful for modest retouching. Image was designed for medical image analysis and includes a number of useful features for that purpose. You can get it virtually free from many user groups

or by logging on to CompuServe (Macpro DL14) or one of the other major services.

Silicon Beach Software has been working on a new version of Digital Darkroom, but at press time the company couldn't comment about release dates. When and if version 2.0 comes out, it will, I'm sure, be worth checking into. Another program with gray-scale features that was forthcoming at press time is Deneba's UltraPaint.

This appears to be one of those do-everything packages, but if you're in the market for a paint package anyway and your gray-scale editing needs are simple, it might also be worth a look.

If you're serious about using digital halftones for production, the choice still isn't cut-and-dried. When it comes to gray-scale software, Enhance is a hard-to-beat combination of the best program at the best price. But it may be that making the best gray-scale program today is a bit like coming up with a better turntable just when everyone is switching to CDs.

Some of the new color programs that should be on the market by the time this article comes out will have even more power than Enhance. At \$1995, ColorStudio is a bit expensive for black-and-white work. But Adobe has announced that its Photoshop will sell for \$895, and the beta version I looked at has some features that retouchers of color or black-and-white images will definitely covet.

To name a few: the ability to feather the edges of masks, which provides the essential ability to alter images without being obvious—subtly dodging a sky here or burning in a faded edge there. Photoshop also has automatic antialiasing, as well as Clone and Stamp features that work along the same lines as Digital Darkroom's Stamp but are much more flexible. For the production minded, Photoshop provides the ability to save gamma curves for later use. The graphics staff at the *New York Times* uses this fea-

ture with every Mac image they print, applying a curve they've developed that adjusts for the limited tonal range of newsprint. The list goes on.

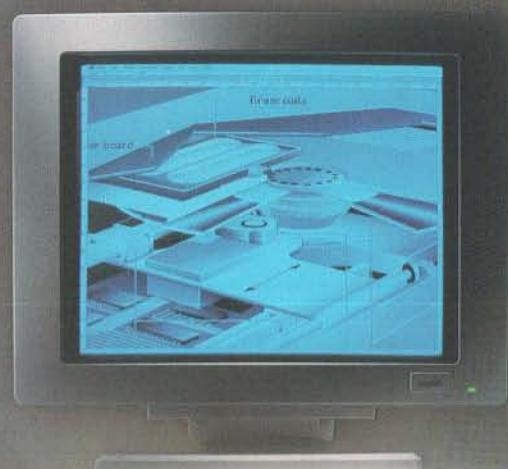
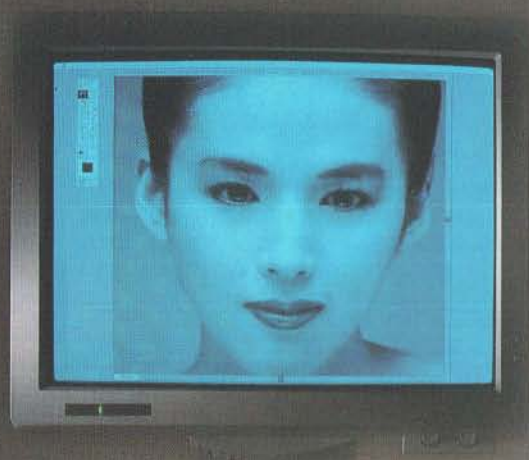
So, turntable or CD? Macworld hasn't officially reviewed Photoshop and we don't usually compare beta software to shipping products. But Photoshop has been used widely enough by people I know both inside and outside Macworld for me to say confidently that ad designers, illustrators who use photographs, or anyone else who wants complete creative control over scans should at least look into Photoshop before they buy. If you plan to do color work anyway, there's no reason to have Enhance *and* an expensive color image processing program. On the other hand, Photoshop is more than twice the price of Enhance and may have other disadvantages that aren't clear at this point. If your operation is strictly black and white and you can get by without Photoshop's features, Enhance is an excellent tool.

Gray-scale editing is an appealing proposition for certain types of work. It's been my observation over the last few years, however, that although scanner sales seemed to be booming and many people had gray-scale editors, few artists or publishers were actually using the software to its potential. In part the reasons had to do with people not having the right hardware to work effectively—no gray-scale display or not enough RAM. In part it was people's resistance to learning the things about digital halftoning that they need to know to get good results. And in part it was that few Linotronic bureaus had the expertise required to produce consistent output.

But the blame also rests with the available software, which hasn't been quite powerful enough to make the effort-to-results equation pay off. Now that a new generation of more advanced image editors is emerging to complement today's more powerful hardware and the maturing service-bureau business, it will be interesting to see whether digital halftoning and photography take off, or whether this will turn out to be a technology whose time never was. **M**

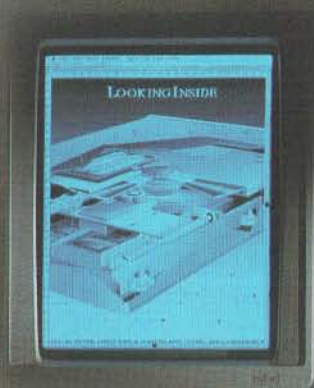
See *Where to Buy* for contact information.







# MONOCHROME MONITOR MANIA



Shown from left to right are the Sigma Designs monochrome and gray-scale SilverView, the MegaGraphic MegaScreen 2001/3001 monochrome monitor, and the Radius monochrome Full Page Display.

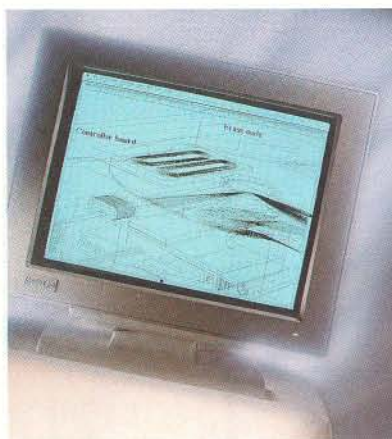
**An  
obsessive  
evaluation  
uncovers  
the best  
monochrome  
monitors**

**E**ach time Macworld Expo rolls around, searching for the ideal monochrome monitor goes to the top of my to-do list. But even though nearly every kind of black-and-white and gray-scale monitor is there under one or two roofs, I end up hardly more enlightened than I was before. The exhibitors rarely set several different monitors side-by-side for easy comparison, and it's almost impossible to view even a handful under uniform conditions. Some beam down at you from above, some stare you straight in the eye, and others look up from belt-buckle level. Some are hidden in the shadows while others face the harsh light of Expo reality. Few monitors at the shows display documents relevant to my kind of work, and heaven only knows if an Expo monitor's controls are set properly.

So, after years of comparing monochrome monitors at numerous Expos without success, I jumped at the chance to compare a group of them in one room, under uniform conditions, displaying the same sample documents. For this article, Macworld Labs tested 12 gray-scale and 11 black-and-white monitors. At the same time, I ran each monitor through its paces with a variety of applications, documents, and subjective tests. (Although some monitors may be used with boards from other manufacturers, all monitors for this article were tested as systems—that is, with board and monitor both coming from the same manufacturer.)

Dozens of monitors and hours of squinty-eyed testing later, I have finally identified my favorite monochrome monitors. But I've also discovered how personal and subjective the choice of a monitor can be. Therefore I can't presume that my top choices will be





RasterOps ClearVue monochrome display

yours. But I can tell you what I've learned about selecting monitors and offer a few opinions along the way.

### Shades of Gray

Gray-scale monitors can display as many as 256 shades of gray, whereas a black-and-white monitor has just two: black and white. If you work with images such as scanned photographs, a gray-scale monitor is a necessity. Since many gray-scale boards, such as Super-Mac's Spectrum/8, produce 256 colors on a color monitor, gray-scale could also be considered the first step toward color. (Similarly, many black-and-white monitors can be converted

into gray-scale monitors simply by changing the board.)

Virtually all gray-scale monitors (including the Apple High Resolution Monochrome Monitor) display 256 gray shades. Apple sells two 16-gray-level monitors (the Portrait Display and the Two-Page Monochrome Monitor), because, Apple says, these monitors match the input of the Apple 16-gray-level scanner and the output of the LaserWriter family. Apple loyalists should check out these 16-shade offerings, but most everyone else will be happier with the 256 degrees of freedom provided by the competition.

### Pixel Density

A pixel (short for picture element) is the smallest dot that a monitor can display; pixel density is the number of pixels per linear inch. (In Macintosh monitors, the pixel density is—or should be—the same horizontally and vertically.) Most monitors have a fixed pixel density; some, however, such as Sigma Designs' L-View and PageView and E-Machines' QuickView Z21, can switch between several different pixel densities, in much the same way my old Selectric typewriter could alternate between 10 and 12 pitch.

Macintosh Plus and SE screens have a pixel density of 72 dots per inch. So do RasterOps' ClearVue/II,

Sigma Designs' SilverView, PCPC's ShadowGraph along with many others. This pixel density is the standard by which all monitors are measured because most applications and all screen fonts are built around it. At 72 dpi, what is displayed on the screen most closely approximates the dimensions of the printed page.

Among the monitors we looked at, only Sigma Designs' L-View and E-Machines' QuickView Z21 can switch to pixel densities of less than 72 dpi. These lower densities (60 dpi and 36 or 40 dpi, respectively) create easy-on-the-eyes, larger-than-life images not unlike the large-type edition of *Reader's Digest*. On the other hand, many monitors display pixel densities higher than 72 dpi. MegaGraphics' MegaScreen 2008 has a pixel density of 75 dpi, for example, while Radius's Two Page Display System is 82 dpi, and E-Machines' The Big Picture is 85 dpi. At these densities, on-screen text, though slightly smaller, is sharper and thus easier to read. Beyond such moderate increases in pixel density, however, everyday type sizes become too small for comfort. An example is the tiny type of Sigma Designs' L-View which, in its 120-dpi mode, is just too much of a good thing (except for the CAD specialists for whom it was designed).

Issues of legibility aside, the choice of desirable pixel density revolves around the opposing forces of WYSIWYG-ness and maximum displayed page area. At 85 dpi, page dimensions on screen are appreciably smaller than the printed page. But compared to 72 dpi (or less), you can see more rows and cells in a spreadsheet, or a greater page area in a page-makeup program. If matching the screen image to the printed output is important to you, stick to 72 dpi. If you work on two-page spreads or large spreadsheets regularly, a pixel density in the 80- to 85-dpi range may allow you to see everything you need to see without scrolling.

### Special SE Considerations

If you are purchasing an external monitor for an SE, you need to consider more than the pixel density, pixel dimensions, and the number of grays a monitor has. Most external moni-

## PIXEL DIMENSIONS EXPLAINED

**T**he diagonal measure of the video tube and the linear dimensions of the active area (the part of the screen that actually displays information) give a rough idea of the real estate you'll be dealing with. But it's the pixel dimensions of the active area that give a true reading of the maximum page area a monitor can display. In fact, four standard pixel dimensions are all you need to know to size up a monitor:

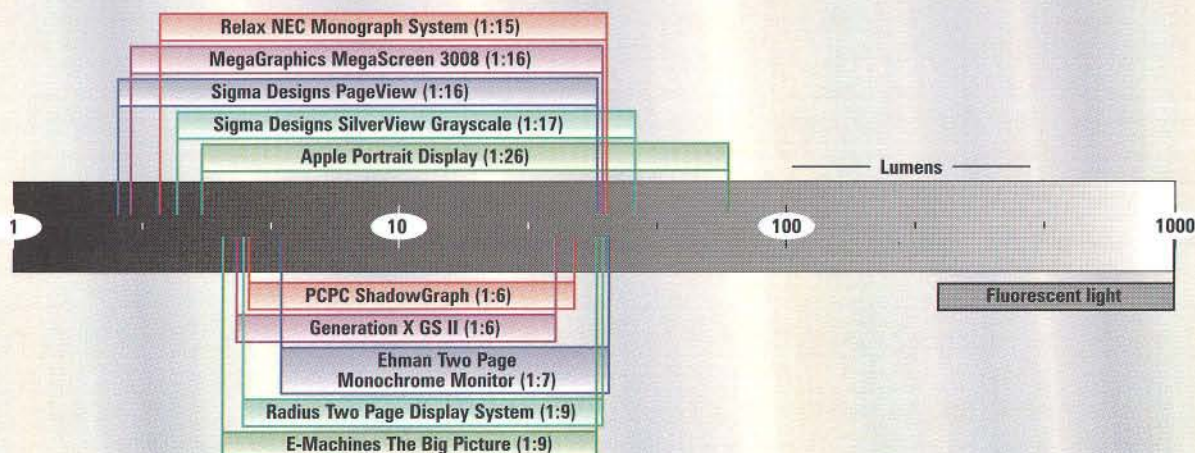
Pixel Dimensions	Display
640 x 860	one full page (vertical)
1024 x 770	two facing pages less about one inch top and bottom and two inches right and left
1150 x 880	two facing pages less about one inch right and left
1280 x 960	two full facing pages

A few monochrome monitors can't display even one full page. The Apple High Resolution Monochrome Monitor, at 640 by 480, and Relax's NEC Monograph System, at 768 by 767, are two examples. Choose one of these monitors only if other characteristics, such as the relatively compact size of the Apple display, heavily outweigh displayed page area in your calculations.



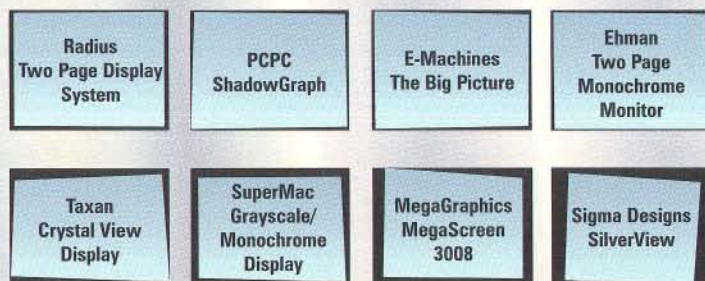
# COMPARING CONTRAST

Measured in Lumens



Since contrast is the relative difference between dark and light areas, monitors with the best contrast (top) are the ones that allow the greatest range between dark and light areas. The monitors with the worst contrast have much narrower ranges (bottom). All other monitors displayed average contrast. The numbers in parentheses denote the ratio of light to dark.

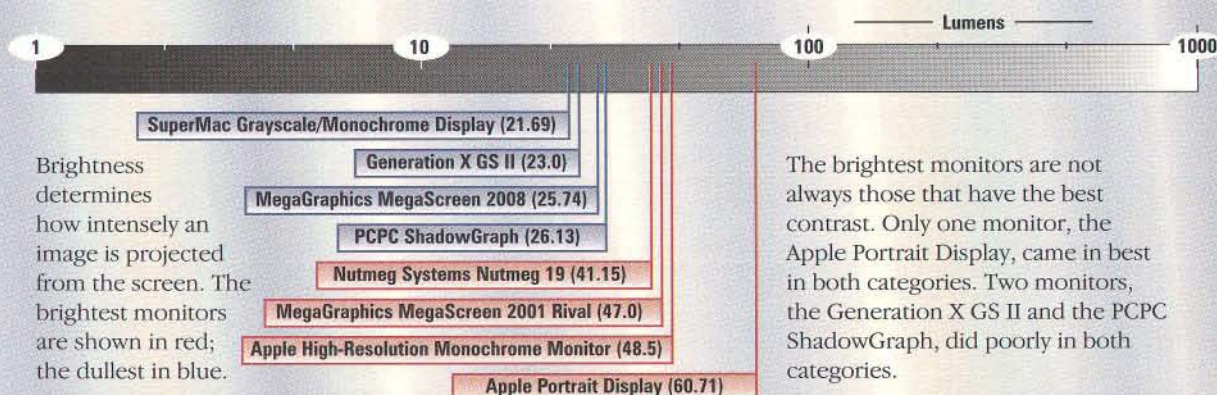
# DISTORTION DISPLAYED



All of the monitors we tested showed some distortion, especially in the corners. This diagram represents the best (top) and worst (bottom) monitors. The drawings are exaggerated, but they have been rendered proportionally to what we measured on the real screen.

# BRIGHTNESS

Measured in Lumens



Brightness determines how intensely an image is projected from the screen. The brightest monitors are shown in red; the dimmest in blue.

The brightest monitors are not always those that have the best contrast. Only one monitor, the Apple Portrait Display, came in best in both categories. Two monitors, the Generation X GS II and the PCPC ShadowGraph, did poorly in both categories.



## BLACK-AND-WHITE MONITORS

	Ehman	E-Machines	E-Machines	MegaGraphics	Nutmeg Systems	Nutmeg Systems	Radius
Product	Two Page	The Big Picture	QuickView Z21	MegaScreen	Nutmeg 19	Nutmeg/Xerox	Radius Full
	Monochrome			2001/ 3001 Rival		Full Page Display	Page Display
Price for Macintosh II series model	\$899	\$1795	\$2495	\$1698	\$1699	\$999	\$1490
Price for Macintosh SE/30 model	\$899	not avail.	\$2495	\$1698	\$1699	\$999	\$1490
Price for Macintosh SE model	\$899	\$1695	\$2395	\$1698	\$1699	\$1299	\$1490
Price for Macintosh Plus model	not avail.	\$1695 <sup>1</sup>	not avail.	\$1748	\$1699	\$1299	\$1490
Orientation	landscape	landscape	landscape	landscape	landscape	portrait	portrait
Diagonal size (in inches)	19	17	21	19	19	15	15
Active area (w x h, in inches)	13.9 x 10.7	11.8 x 9.3	16 x 12	13.7 x 10.7	14.2 x 10.7	8 x 10	8.3 x 11.2
Pixel dimensions available (w x h)	1024 x 769	1024 x 808	576 x 432; 640 x 480; 1152 x 864; 1280 x 960	1024 x 826	1024 x 768	606 x 760	640 x 864
Pixel density available (in dpi)	73	85	36, 40, 72, 80	75	72	72	77
Vertical refresh rate available (in Hz)	78	60	70, 76	75	78	76	69
Antiglare treatment	no	no	yes	optional	no	yes	no
Virtual screen	Stepping Out II <sup>2</sup>	no	hardware	no	Stepping Out II	Stepping Out II	hardware
Tilt and/or swivel stand	yes	no	yes	yes	yes	yes	yes
Warranty period	1 year	1 year	1 year	1 year	1 year	1 year	1 year
Extended warranty available	yes	yes	yes	yes	no	no	no
Special features for 512K, Plus, SE series							
Can use both screens	yes	yes	yes	yes	yes	yes	yes
Can adjust cursor crossover point	no	yes	yes	yes	yes	yes	yes
Position in relation to Mac	right	left	left	right or left	right or left	right or left	right or left
Can display same image on both screens	no	yes	no	yes	no	no	no

<sup>1</sup> Macintosh 512K model also available. <sup>2</sup> For Macintosh II and SE/30 only.

tors for the SE, such as the RasterOps ClearVue/SE and Taxan's Crystal View SE, can be used in tandem with the SE's screen; a few, such as Sigma Designs' L-View, turn off the SE screen. Since the SE screen is a worthwhile work area and a convenient place to park tear-off menus, tool palettes, and the like, you should avoid monitors that put it out of commission.

Flexibility in the placement of the external monitor in relation to the SE varies according to the monitor's utility software. With some, the crossover window (the area in which the cursor can move between monitors) is always on the left side of the SE screen and/or is fixed vertically; with others, the crossover area can be set either on the right or the left of the SE screen and adjusted up or down to conform to the actual position of the big monitor.

Finally, for those who want to use the larger screen for demonstrations,

some external monitors, such as E-Machines' The Big Picture and RasterOps' ClearVue/SE, can display a blown-up duplicate of the image that's on the SE screen.

### The Search for Perfection

Narrowing your choices by determining the optimum pixel density, pixel dimensions, and number of gray shades for your work is equivalent to selecting the right tool for the job. Now comes the hard part—determining which brand of tool feels right in your hand. The quality of the screen image is an essential part of that feeling. Image quality is an elusive beast, however, composed as it is of many different elements: focus, contrast, brightness, flicker, phosphor tint, freedom from flaws, and so on.

Perfection might be possible in monitors, but only the Pentagon would be willing or able to pay the price. Every monitor I looked at had

some sort of visual flaw. The upper left corner was a common problem; it was almost always out of focus or bent out of shape to some degree (see "Distortion Displayed"). Some monitors displayed other flaws as well, such as squashed or fuzzy menu bars, kinks in straight lines, bowed or pinched borders, or black specks in the phosphor (the coating on the inside of the screen that creates the visual image). Some flaws, such as a fuzzy menu bar, are due to compromises made by the engineers, and are thus more or less characteristic of that model; other flaws, such as specks in the phosphor, may vary from monitor to monitor.

Since no Mac vendor makes the perfect monitor, you shouldn't waste time looking for one. Rather, you should search for the monitor with the fewest flaws, and make sure that what flaws there are won't eventually drive you crazy. I find a few black specks in the phosphor easy to over-



Radius	RasterOps	Sigma Designs	Sigma Designs	Taxan
Radius Two	ClearVue/II and SE	SilverView	PageView	Taxan Crystal View
Page Display				Display
\$1990	\$1995	\$1999	\$1399	\$1699
\$1990	not avail.	\$1999	\$1399	\$1699
\$1990	\$1995	\$1999	\$1299	\$1699
not avail.	not avail.	not avail.	not avail.	not avail.
landscape	landscape	landscape	portrait	landscape
19	19	21	15	19
14 x 10.7	13.9 x 10.4	16 x 12	8 x 10.7	14.2 x 10.7
1152 x 882	1024 x 768	1152 x 870	576 x 768; 640 x 870; 704 x 940	1024 x 768
82	72	72	72, 80, 88	72
71	72	73	80-97	78
no	no	no	optional	yes
no	no	no	no	no
yes	yes	yes	yes	yes
1 year	1 year	1 year	1 year	1 year
no	yes	no	no	yes
yes	yes	yes	yes	yes
yes	yes	no	no	no
right or left	right or left	right or left	right or left	right or left
yes	yes	no	no	no

look, while bends in what should be straight lines are maddening. Not one of the monitors I reviewed, however, had visual flaws so irritating that I ruled it out for that reason alone.

Large-screen monitors are rarely without other visual flaws, including problems with focus; edges and corners in particular are prone to fuzziness. In general, focus was uniformly excellent on the Apple displays (except for the Two-Page Monochrome Monitor) and on all the models for the Mac II by Radius, SuperMac, and RasterOps. Among the others, I found minor, and usually spotty, focus problems along the sides and the bottom, but because these areas usually contain page margins and scroll bars rather than vital information, a few fuzzy spots are acceptable. Watch out, however, for bands of fuzziness wider than 1/4 inch or so, and for fuzziness along the top of the screen. Although some people might consider it merely a cosmetic

distraction, out-of-focus menu bars—such as those found in Taxan's Crystal View and the Apple Two-Page Monochrome Monitor—can be a major visual irritant.

### The Quality of the Environment

The color of your office, the position of windows, the level of ambient light, whether or not other monitors will be attached to your Mac, and other aspects of your work environment need to be factored into your final decision as well. For example, consider antiglare treatment, which is included on some monitors and not on others. If you habitually wear white shirts and work in a brightly lit room, even the best antiglare treatment may not help much. On the other hand, if you usually wear dark colors and have some control over the lighting and physical arrangement of your work area, you may not need any antiglare treatment.

In favorable conditions such as low



SuperMac Grayscale/Monochrome Display

light, antiglare treatment can enhance contrast. Under unfavorable conditions (lots of light, lots of glare), antiglare treatment can reduce contrast. Under all conditions, antiglare treatment reduces brightness and often makes the screen image appear slightly unfocused. (Turning up the brightness to compensate can put the image even more out of focus.) If your work environment permits, I recommend that you eschew antiglare treatment, or at least avoid heavy-duty treatment such as that found on the Apple Two-Page Monochrome Monitor.

No one argues with the need for good contrast (whiter whites and blacker blacks) and brightness (to avoid that washed-out look), and Macworld Labs' test results show which monitors come out on top in this regard (see "Comparing Contrast" and "Brightness"). But remember that the right brightness and contrast for one situation may be far more or far less than is needed in another. In general, if your workplace has low light levels, you won't need to crank the brightness and contrast up very high. If you use your monitor for, say, public demonstrations in brightly lit areas, you'll need all the brightness and contrast you can get.

One other point about brightness: monitors tend to decrease in brightness as time passes and the phosphor loses its youthful glow. If you buy a monitor whose brightness control can be turned up higher than you currently need, you'll be able to compensate for the monitor's inevitable senescence. If the monitor needs to be set



## GRAY-SCALE MONITORS

	Apple Computer	Apple Computer	Apple Computer	E-Machines	Generation X	MegaGraphics	PCPC
Product	Portrait Display	High-Resolution	Two-Page	QuickView	GS II and GS 30	MegaScreen	ShadowGraph
		Monochrome	Monochrome	Z21 IQ		2008/3008	
		Monitor	Monitor				
Price for Macintosh II series model	\$1698 <sup>1</sup>	\$1047 <sup>2</sup>	\$2748 <sup>3</sup>	\$3495	\$1999	\$2948	\$2895
Price for Macintosh SE/30 model	not avail.	not avail.	not avail.	not avail.	\$1999	\$3198	\$3495
Price for Macintosh SE model	not avail.	not avail.	not avail.	not avail.	not avail.	not avail.	not avail.
Price for Macintosh Plus model	not avail.	not avail.	not avail.	not avail.	not avail.	not avail.	not avail.
Orientation	portrait	landscape	landscape	landscape	landscape	landscape	landscape
Diagonal size (in inches)	15	12	21	21	19	19	19
Active area (w x h, in inches)	7.8 x 11	8.4 x 6.3	15 x 11.3	16 x 12	14.2 x 10.7	13.6 x 10.7	14.2 x 10.7
Pixel dimensions available (w x h)	640 x 870	640 x 480	1152 x 870	1280 x 960	1024 X 768	1024 x 826	1024 x 768
				(at 80 dpi)			
Pixel density available (in dpi)	80	76	77	72, 80	72	75	72
Vertical refresh rate available (in Hz)	75	66.7	75	70, 76	75	69	60
Number of gray levels available	2, 4, 16	2, 4, 16, 256	2, 4, 16	2, 4, 16, 256	2, 4, 16, 256	2, 4, 16, 256	2, 4, 16, 256
Antiglare treatment	yes	yes	yes	yes	yes	optional	yes
Virtual screen	no	no	no	hardware	no	no	Stepping Out
Tilt and/or swivel stand	optional	optional	yes	yes	yes	yes	yes
Warranty period	3 months	3 months	3 months	1 year	1 year	1 year	1 year
Extended warranty available	no	no	no	yes	no	yes	no
Special features for 512K, Plus, SE series	n/a	n/a	n/a	n/a			
Can use both screens					yes	yes	yes
Can adjust cursor crossover point					no	yes	yes
Position in relation to Mac					right or left	right or left	right or left
Can display same image on both screens					no	yes	no

<sup>1</sup> \$1099 for Macintosh IIci (board not required).<sup>2</sup> \$399 for Macintosh IIci (board not required).<sup>3</sup> \$2149 for Macintosh IIci (board not required).

at full brightness from the very beginning, however, there's no way you will be able to adjust it to be bright enough a year or two down the road.

### Monochromatic Colors

Most phosphors for the Macintosh come in one of three different shades: blue (like Apple's monitors and the Nutmeg 19), paper white (SuperMac's Grayscale/Monochrome Display), and amber yellow (E-Machines' The Big Picture and Relax Technology's NEC Monograph system) (see "Phosphor Color"). Many Macintosh owners prefer the blue of the Mac Plus and SE screens because it is what they've grown accustomed to.

First-time monitor buyers, however, should know that people tend to find amber yellow phosphor more comfortable in incandescent light, and blue monitors more comfortable in fluorescent light. Also, if you are buying a second monitor, it's usually a good idea to stick with more or less

the same color as your original monitor. Blue and amber yellow monitors look jarringly different when sitting side-by-side.

### Persistence and Surge

A phosphor's persistence is the length of time it takes the phosphor to turn off; the longer the persistence, the more likely you are to see momentary ghosts of disappearing or moving objects. All monitors ghost to some extent, but under average lighting conditions, you shouldn't be aware of it. Apple monitors have the shortest persistence; if you work with animation or live-action video, these are good choices. In our tests the longest persistence was displayed by Sigma Designs' L-View and by E-Machines' The Big Picture. The latter displayed strong, sickly yellow ghosts whenever part of the screen switched from white to black. I would avoid The Big Picture for this reason alone. All the other monitors had acceptable persistences

in between these two extremes.

All monitors also experience surge: a change in the linear dimensions of the active area, like a balloon suddenly inflating or deflating. Generally speaking, only people who perform graphics tasks involving frequent switching between largely black and largely white screens are likely to experience surge at its worst; if this describes what you do, you want to avoid monitors with high surge scores. (These include E-Machines' Z-21 and The Big Picture, MegaGraphics' 2001/3001, the Nutmeg 19, and the Radius Full Page Display.) On the other hand, I tested the Radius Full Page Display for several weeks in text-intensive work, and even though it has the worst surge-test scores, I hardly noticed the problem.

### What You See Is What You Get

What you see on a monitor's screen is in some ways comparable to a motion picture; a sequence of dozens of images per second gives the impression



Radius	Relax Technology	Sigma Designs	Sigma Designs	SuperMac Technology
--------	------------------	---------------	---------------	---------------------

Radius Two	NEC Monograph	SilverView	Monochrome	Grayscale/
Page Display	System		L-View	Monochrome
				Display
\$3390	\$1995	\$2999	\$2495	\$3294
not avail.	not avail.	not avail.	\$2495	not avail.
not avail.	not avail.	not avail.	\$2395	not avail.
not avail.	not avail.	not avail.	not avail.	not avail.
landscape	square	landscape	landscape	landscape
19	16	21	19	19
14 x 10.7	10.2 x 10	16 x 12	14 x 10.1	13.9 x 10.3
1152 x 882	768 x 767	1152 x 870	1200 x 1664;	1024 x 768
			600 x 832	
82	72	72	60, 120	72
71	90	73	60	75
2, 16, 256	2, 4, 16, 256	2, 4, 16, 256	4	2, 4, 16, 256
no	yes	no	optional	yes
no	no	no	no	hardware
yes	yes	yes	yes	yes
1 year	1 year	1 year	1 year	1 year
no	no	no	no	no
n/a	n/a	n/a		n/a
			no	
			no	
			right or left	
			no	



The Radius monochrome and gray-scale Two Page Display

of a rock-solid display. The rate at which those images are flashed on the screen is called the vertical refresh rate; a rate of 74Hz, for example, means that 74 images per second are painted on the screen. If the refresh rate is too low, below 60Hz, the screen will seem to flicker, like an old-time movie. Above 65Hz, most people will see a steady screen without any flicker. What you see at rates between 60Hz and 65Hz depends on the acuity of your vision.

Screen flicker is, at best, a strain on the eyes and, at worst, a form of information-age torture. Nowadays, most monitors have refresh rates above 70Hz. But low-refresh-rate monitors do still exist, and you should reject them if you detect flicker. E-Machines' The Big Picture, PCPC's ShadowGraph, and Sigma Designs' L-View all have refresh rates of 60Hz, for example, and I detected enough flicker in all three to rule them out.

If you work primarily with words,

be sure to compare text quality of different monitors. It's a little-known fact that individual pixels vary in size and shape from one brand of monitor to the next. Because body-text type is often composed of one- and two-pixel-wide strokes, this variation can have a significant effect on the appearance of type on screen.

A comparison of Apple's Portrait Display and the Radius Full Page Display illustrates what I mean. New York font, a good all-around font for on-screen text work, looks spindly and anemic on the Apple monitor, and full and robust on the Radius. This difference was enough for me to strike the Apple monitor from my list.

#### Little (and Not So Little) Extras

Monitors differ significantly in the amount and quality of utility software they provide. Many monitors, such as those from Apple, are sold without software of any kind. Others, such as those from Radius and some models

from E-Machines, include screen savers and utilities for tear-off menus, larger menu bars, automatic dialog-box centering, and more. Since utility software is not essential to the operation of the monitor and can even conflict with your existing INITs, it should figure little, if at all, in your buying decision. If the monitor you like best lacks utility software, you can easily buy a screen saver, tear-off menu utility, or whatever from a software company.

One especially useful capability for an external monitor is a virtual screen. With a virtual screen, the Macintosh is tricked into thinking that the active area is larger than it really is. When the cursor reaches the edge of the screen, the view automatically shifts to reveal the hidden part of the virtual screen. Several monitors, such as PCPC's ShadowGraph, Ehman's Two Page Monochrome Monitor, and the Nutmeg 19, come bundled with Berkeley Systems' virtual screen program, Stepping Out II.

Virtual screens are built into the hardware of other monitors. Hardware-based virtual screens do not use System RAM as software-based ones do and they usually allow smoother panning. Radius's Full Page Display (real resolution 640 by 864 pixels) offers a virtual resolution of 1024 by 864. SuperMac's Grayscale/Monochrome Display offers three virtual resolutions (at the expense of the number of gray levels), the largest being 4096 by 1536 pixels. And E-Machines' already large The Big Picture Z21 supports dozens





Ehman Two Page Monochrome Display

of different virtual resolutions, with sizes up to 10,240 by 960 pixels.

### The Right Tool for the Job

We didn't use Price Waterhouse to tabulate the results, but the staff at Macworld Labs and I did choose our favorites, and I'll end the suspense and

open the envelopes. Our picks are predicated on common tasks such as editing text and graphics as well as on our testing results.

For a full-page monitor, we preferred Radius's Full Page Display because of its superior text quality and sharp focus. We settled on two choices for a big-screen black-and-white monitor. MegaGraphics' MegaScreen 2001/3001 has a near-WYSIWYG pixel density of 75 dpi and performed consistently well, in our opinion. Radius's Two Page Display is the other big-screen favorite; it's the same size as the MegaScreen, but it displays a larger page area at a non-WYSIWYG 82 dpi. For a big-screen gray-scale monitor we also chose two. Again, one is the Radius Two Page Display, this time with a gray-scale board. The other is Sigma Designs' SilverView, a true WYSIWYG monitor (at 72 dpi), whose phosphor, unlike that of our other picks, is on the yellow side. Runners-up in the two big-screen categories include the

RasterOps ClearVue and SuperMac's Grayscale/Monochrome Display.

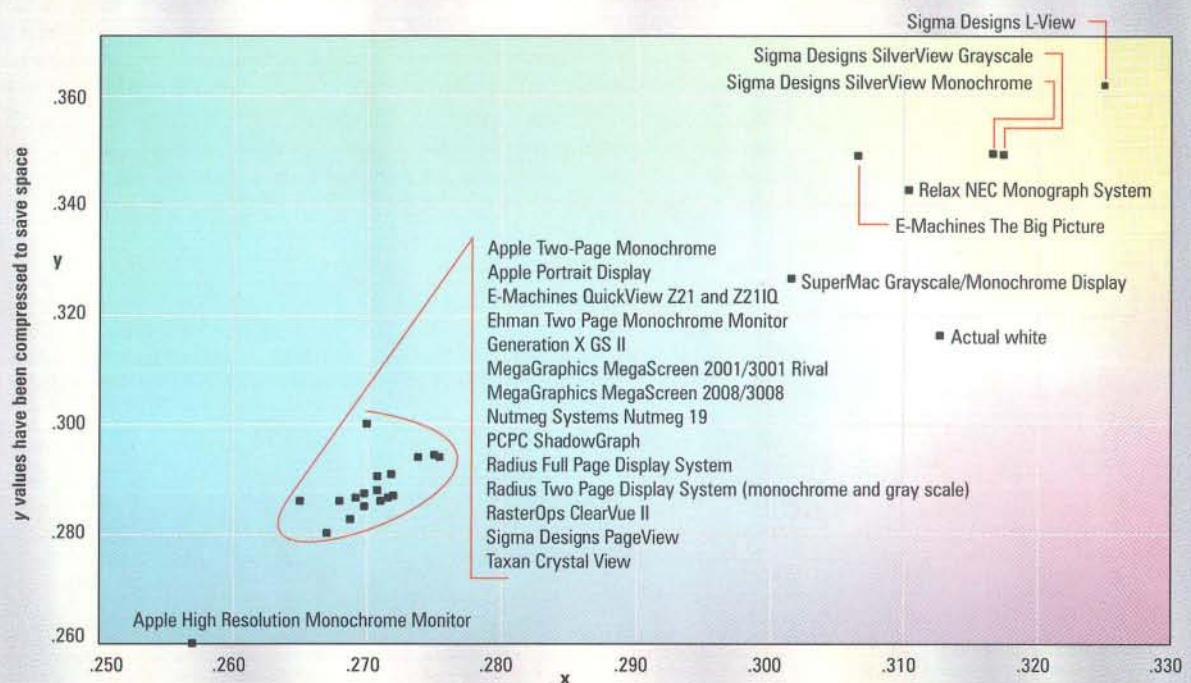
Finally, you may have noticed that I've said little about the price of monochrome monitors. Because you will have to live with your monitor day after day, possibly for many years, the choice has more to do with how well you work together than it does with money. If you buy a monitor primarily because it's inexpensive, one morning you may find yourself sitting opposite a monitor you can't stand to look at anymore. My advice is to save your eyesight and your sanity and hitch up with the right monitor the first time, even if it costs a bit more. ■

See Where to Buy for contact information.

.....  
**Robert C. Eckhardt** is a Macworld contributing editor, and author of *The Fully Powered Mac* (Brady Books, 1988) and *The FullWrite Professional Handbook* (Brady Books, 1989).

## PHOSPHOR COLOR

Measured as x and y coordinates on a detail of a standard CIE chromaticity diagram



Even though these are monochrome monitors, each has a distinctive tint. Blue is the color people are accustomed to seeing on a Mac's screen and is best in fluorescent light. Yellow is easier on the eyes in incandescent light. We used a Minolta TV Color Analyzer to test phosphor color.



# GEEK CHIC

Preview Issue

When is a geek  
chic?



THE JOLT DIET

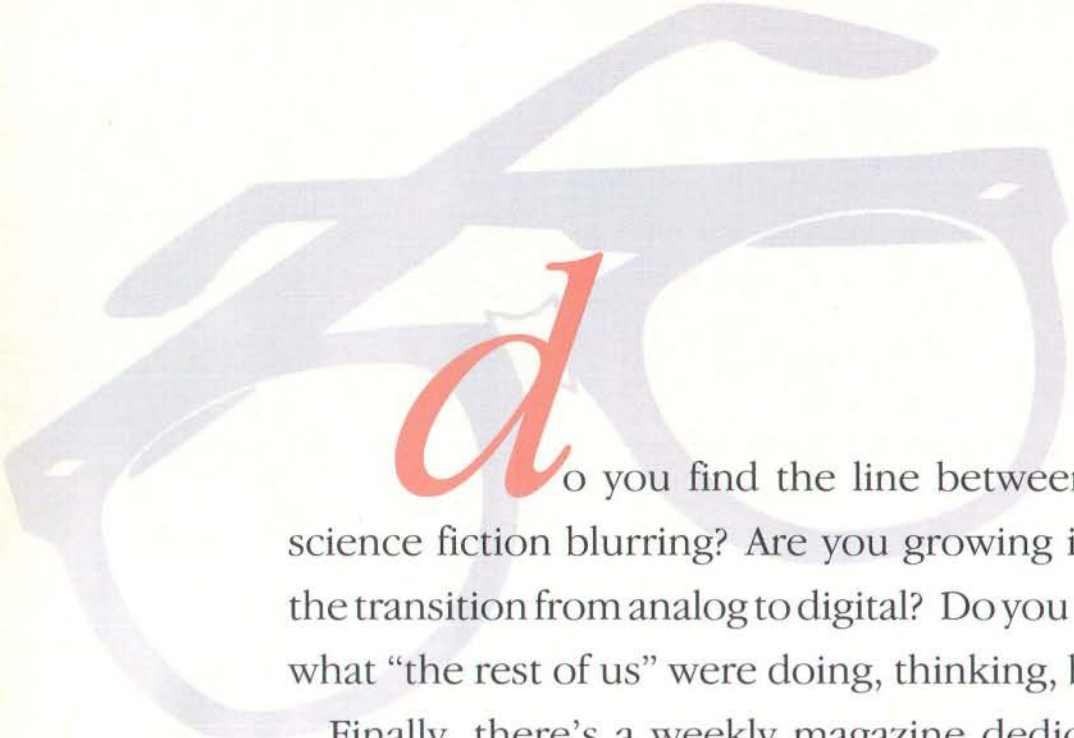
INTEGRATED FASHION CIRCUITS

BINARY LOGIC LINGO

UNMASKING THE TECHNO ELITE

MACWORLD PRESENTS NEW  
SISTER PUBLICATION





do you find the line between real life and science fiction blurring? Are you growing impatient with the transition from analog to digital? Do you wish you knew what “the rest of us” were doing, thinking, buying?

Finally, there's a weekly magazine dedicated to documenting the manners and tastes of those who boot up and

log on daily. *Macworld* is proud to announce the launching of our new sister publication...

## GEEKCHIC™

Just as the phonograph once shaped the aesthetic of an entire era, the personal computer promises to spawn a life-style all its own. “The geeks of today are the trendsetters of tomorrow,” claim the founders of Harvard's Society of Nerds and Geeks (SONG). We couldn't have said it better ourselves.

The technology has cunningly woven itself into our social fabric. T-shirts, shoulder bags, and bumper stickers broadcast allegiance to user groups and software products. Casual conversations are peppered with a brand of technospeak that was once the hallmark of the electronic nerd or ham radio operator. Macintoshes appear as props in the trendiest sitcoms and advertisements. Geekdom unexpectedly finds itself stylish.

As a fascination with the accoutrements of computing eclipses the allure of the technology itself, we find a new aesthetic shaping our expectations. No longer satisfied with adding a new peripheral or a project-management application to our computing environment, we stroll the aisles of computer emporiums and thumb through mail-order catalogs looking for power, excitement, and peer approval. *GeekChic™* is the atlas to aid us in navigating these uncharted electronic waters.

*GeekChic™* will feature book and demo reviews, blow-by-blow accounts of all the major Mac-

related court cases, and how-to articles covering topics such as applying faux finishes to your Mac and sewing custom dustcovers for hard-to-fit peripherals. We'll offer in-depth tip sheets for programs such as ResEdit, MacsBug, or Multi-Finder. After each Mac trade show, we'll rank the promotional bags and badges and tell you which were most popular on the show floor. We'll critique the symposia and rate the nearby cafés and restaurants.

And each week you can look forward to our regular columns and departments. *Geek of the Week* offers profiles of movers and hackers within the Mac community. *GeekChicSpeak* will offer an illuminating collection of odd words, phrases, and acronyms. *Celebrity Makeovers* will turn famous users' Mac configurations into cutting-edge workstations. And finally, inspired by an article in *Cosmopolitan* magazine that dubbed the Boston Computer Society “one of the best places to meet men in Boston,” we introduce our *Meet a Geek* personals column. Lonely readers will no longer need to look for companionship while dawdling over remaindered printed circuit boards from France.

If you've read this far, you're just the nineties sort of person we're looking for. Go on, admit it. You're *GeekChic™*. Whether you subscribe to our glossy hard-copy edition or to our electronic online version, we know you'll be glad you're keeping up with the geeks. And remember, if you subscribe to *GeekChic™* before April 1, you could win big prizes.



# GEEK OF THE WEEK

**G**eekness is a frame of mind. Some are born to it; others gravitate toward it. Each week we'll interview individuals who embody the geek ethos. We'll probe their bioROMs and offer insights into the thought processes of the users and shakers who are shaping our electronic environment.

Our first *Geek of the Week* is Plato Cobol, author of the ever-popular adventure games *Windoids from Hell*, a nightmarish ride through the brain of an object-oriented programmer, and *Marching Ants*, an arcadelike game with an add-on that allows the keyboard to carry small electrical charges.

GC: Hi Plato, thanks for taking the time to meet with us.

PC: Right, so let's hit it. I've got a killer deadline to meet.

GC: What project are you working on right now?

PC: Bomber Billiards. It's a game that combines flight simulation with 3-D billiards. We're going into beta right now. So far everyone who's seen it thinks it's the hottest thing since Tetris.

GC: Why do you think sports-simulation games are so popular with geeks?

PC: You don't have to wear special clothes, and most of us were never that good at the real thing anyway.

GC: You're a prolific programmer. What's your daily schedule like?

PC: Go to bed at dawn. Wake up at noon. Eat breakfast. Then work until dawn again.

GC: Breakfast is your only meal?

PC: Well, I wrote a little program that turns my coffee maker on whenever I boot up, and there's a Jolt Cola dispenser down the hall. I modem out for pizza once in a while.

GC: You know of a pizza place that lets you order via modem?

PC: Sure, it's called Big Bytes.

GC: Do you have a separate phone line for your modem?

PC: Of course. What if my mother wanted to link me?

GC: Your mother is a Mac user?

PC: She's a sysop for a BBS that lets subscribers play bingo online.

GC: You have quite a setup here. I see quite a few storage devices piled up here. What are you using these days?

PC: Well, I have three hard disks daisy-chained together—an old 40MB and two 100MB ones. Plus I have a tape drive for backup, and I've been experimenting with an erasable optical.

GC: Do you still run out of space?

PC: Sure. All my INITs and cdevs barely fit on the small drive.

GC: Do you beta test many programs?

PC: Yeah, what's it to you? I take nondisclosure pretty seriously.

GC: Sorry, didn't mean to pry. What's the first thing you do after installing a new application?

PC: Memorize the keyboard shortcuts.

GC: Have you ever borrowed or lent any pirated software?

PC: I thought we agreed that you wouldn't ask those kinds of questions.

GC: Sorry. What's your favorite program?

PC: MacsBug.

GC: What's your most prized possession?

PC: Well, that would have to be either my unmodified 128K or my HomeBrew Computer Club T-shirt.

GC: Do you back up regularly?

PC: Nah, backing up is for wimps.

GC: I see the complete set of *Inside Macintosh* on your shelves. Have you read them all?

PC: Read them? Hell, I've memorized every volume. Go on, ask me anything.

GC: No, no. I believe you. So how did you get started with the Mac?

PC: I wrote a fan letter to Steve Wozniak back in the old days. He invited me to drop by. It's been strict interface guidelines ever since.

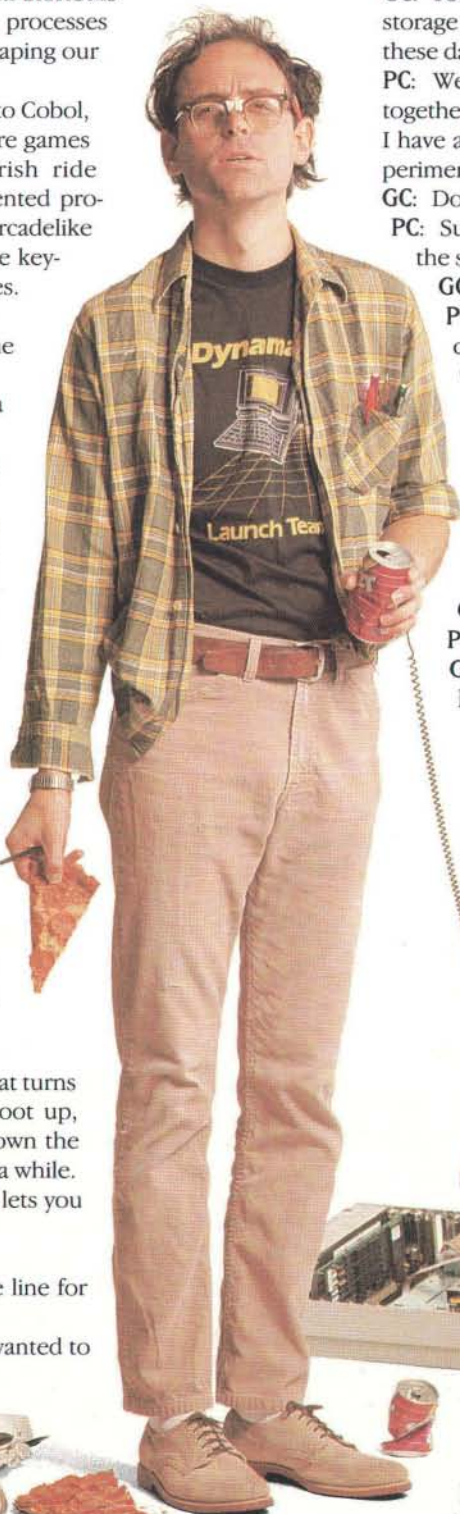
GC: Ever been tempted to abandon the Mac for Jobs's black box?

PC: Naw, programming it is too easy.

GC: Well, Plato, I see we're nearly out of time. Thanks a lot for being

our first *Geek of the Week* and good luck with Bomber Billiards.

PC: Yeah, right, so when do I get my *GeekChic*™ T-shirt?





```
main()
```

```
{
    grafptr gp, gpsave; /* two pointers to grafports */
    integer right;
    char *malloc(); /* memory allocated
```

```
right = theport->portrect
```

```
printf("The right s
```

```
gpsave = theport:
```

```
printf("The graf
```

```
printf("Hit th
```

```
while ( !butt
```

```
gp = (grafptr
```

```
openport(gp)
```

```
eraserect (&
```

```
framerect (&
```

```
moveto(20, 5
```

```
printf("gp
```

```
thege
```

```
printf("Nov
```

```
gp->
```

```
printf("The
```

```
textfont(1)
```

```
textsize(10)
```

```
printf("but
```

```
printf("Hit
```

```
printf("butt
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

```
printf("hit
```

## GEEKCHIC

# Speak

The vernacular of geekdom can be disconcerting for the uninitiated. Readers of *GeekChic™*, however, will no longer need to worry about confusing terms such as Boolean and bezier, grep and fetch, widow and orphan. In our *GeekChicSpeak* column, noted technolinguist William Satire will analyze the etymology of the terms that make up the lingua franca of the cybernetics set. After reading *GeekChicSpeak* for a few issues, you'll never again be caught speechless at a trade show or user-group meeting. To gauge your current grasp of the Mac's idiomatic argot, we've put together a quiz. Have fun and don't cheat.

### 1. INIT

- a. member of Eskimo tribe
- b. small program launched at start-up
- c. shiny black insect that bites

### 2. RAM

- a. John Sculley's astrological sign
- b. random access memory
- c. member of Los Angeles football team

### 3. ISDN

- a. I Still Don't Know
- b. Integrated Services Digital Network
- c. InterStellar Dime Nickelodeon

### 4. hot link

- a. Cajun ground pork dish
- b. programming tie between applications
- c. secret KGB wiretapping device

### 5. terabyte

- a. popular name for pet snapping turtles
- b. one trillion bytes
- c. an alien in the 23rd "Star Trek" episode

### 6. SCSI port

- a. Fleet Week site
- b. small computer systems interface
- c. cheap after-dinner drink

### 7. MIDI

- a. below-the-knee fashion for women
- b. musical instrument digital interface
- c. Walter's surname

### 8. OOP

- a. surname of comic Neanderthal
- b. object-oriented programming
- c. what you say after locking yourself out

### 9. pixel

- a. small fairylike creature
- b. screen display unit
- c. hairstyle popular in the 1950s

### 10. alpha channel

- a. swimmer's ultimate challenge
- b. 8 extra bits in new QuickDraw
- c. noted Parisian perfume

### 11. QuickDraw

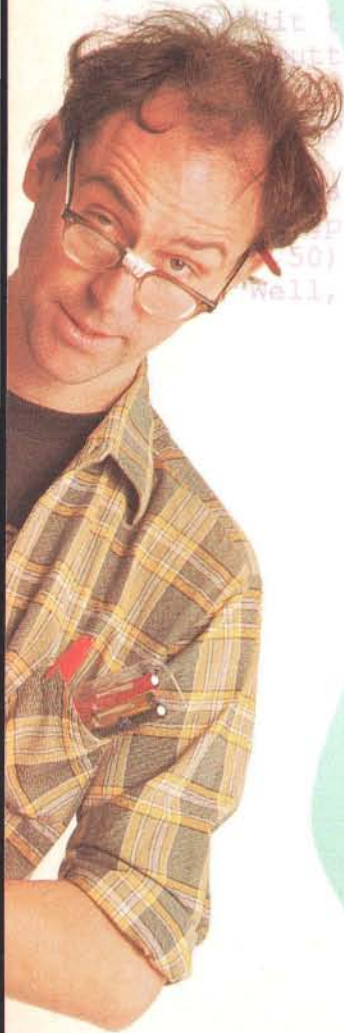
- a. Huckleberry Hound's cohort
- b. Apple's screen-imaging system
- c. left-brain enhancement technique

### 12. terminator

- a. Schwarzenegger's job description
- b. end of a SCSI connection
- c. author of dictionary

**SCORING:** Real geeks are so sure of themselves they wouldn't deign to check here; but give yourself an extra ten minutes with your favorite computer game for each *b* answer. If you answered more than two of the questions with an *a* or *c*, you definitely need to commit each week's *GeekChicSpeak* column to memory. Get smart. Subscribe to *GeekChic™* now.

And remember, everyone who subscribes to *GeekChic™* before April 1 will receive, absolutely free, Acronyms Dancing on the Head of a Pin, an animated HyperCard stack that indexes over 10,000 computer-related acronyms.





## MEET A GEEK

After distributing pilot issues of *GeekChic™* at a few of the finer Silicon Valley delicatessens, we discovered that one of the most popular sections was *Meet a Geek*. Readers submit listings to our personals column describing the contents of their System Folder, their backup routine, and their favorite clip art package; each hopeful was assigned one of our electronic-mailbox numbers. Dozens of readers too bashful or too busy to meet significant others through traditional mating services have found *Meet a Geek* the ideal forum for their romantic exchanges.

We are pleased to announce that one such couple, Bitsy Apda and Chip Simm, are now engaged to be married. "I didn't realize that love was just a 9600-baud modem away," says Bitsy, a programmer for a major database developer. She fell for Chip when she read the message he'd uploaded to her box number: "Hey, gigababe, why buy a generic OEM hard drive when, for a mere \$300 extra, you can enjoy the prestige, security, and free coffee mug that comes with the same drive in a brand name box!" Chip, a WORM-drive developer, was intrigued when he heard that all of Bitsy's dreams adhered to Mac interface guidelines; and when she wrote that she wrapped her IICx in a silver lamé cover, he just had to see it.



**Talk about magneto-optical! Chip and Bitsy are definitely stuck on each other.**

For their first date, Bitsy packed a romantic lunch for two in her Portable Mac case, and Chip arrived carrying a 24-bit printout of digitized roses. Both were wearing anti-radiation glasses and Screenscreen (a zinc oxide-like substance that guards against harsh monitor rays), and between them they were carrying several dozen floppies. The duo were so taken with each other that they began designing desktop-published wedding invitations on the spot.

Currently in the process of combining their extensive collections of Apple logo pins and badges, Bitsy and Chip look forward to uploading joint holiday greetings for many fiscal years to come.

## WIN BIG PRIZES!!!

*GeekChic™* isn't publishing yet, but prizes and bonuses await as soon as it does. In addition to the animated HyperCard stack, Acronyms Dancing on the Head of a Pin, readers will receive an official *GeekChic™* T-shirt and their names will be entered in our *GeekChic™* Sweepstakes. Three lucky winners will receive the ergonomically designed Keyboardion from Vapo-Matix. Besides easing repetitive-stress syndrome, the Keyboardion comes programmed to play several popular polkas. **G**

Writers interested in submitting articles to *GeekChic™* should send manuscripts with SASE to *GeekChic* editor Suzanne Stefanac.

*If you've read this far, you're our kind of reader. As with so many other products coveted by true geeks, *GeekChic* isn't shipping yet and, quite frankly, may never ship. Stay tuned for possible beta publication next April Fool's Day.*



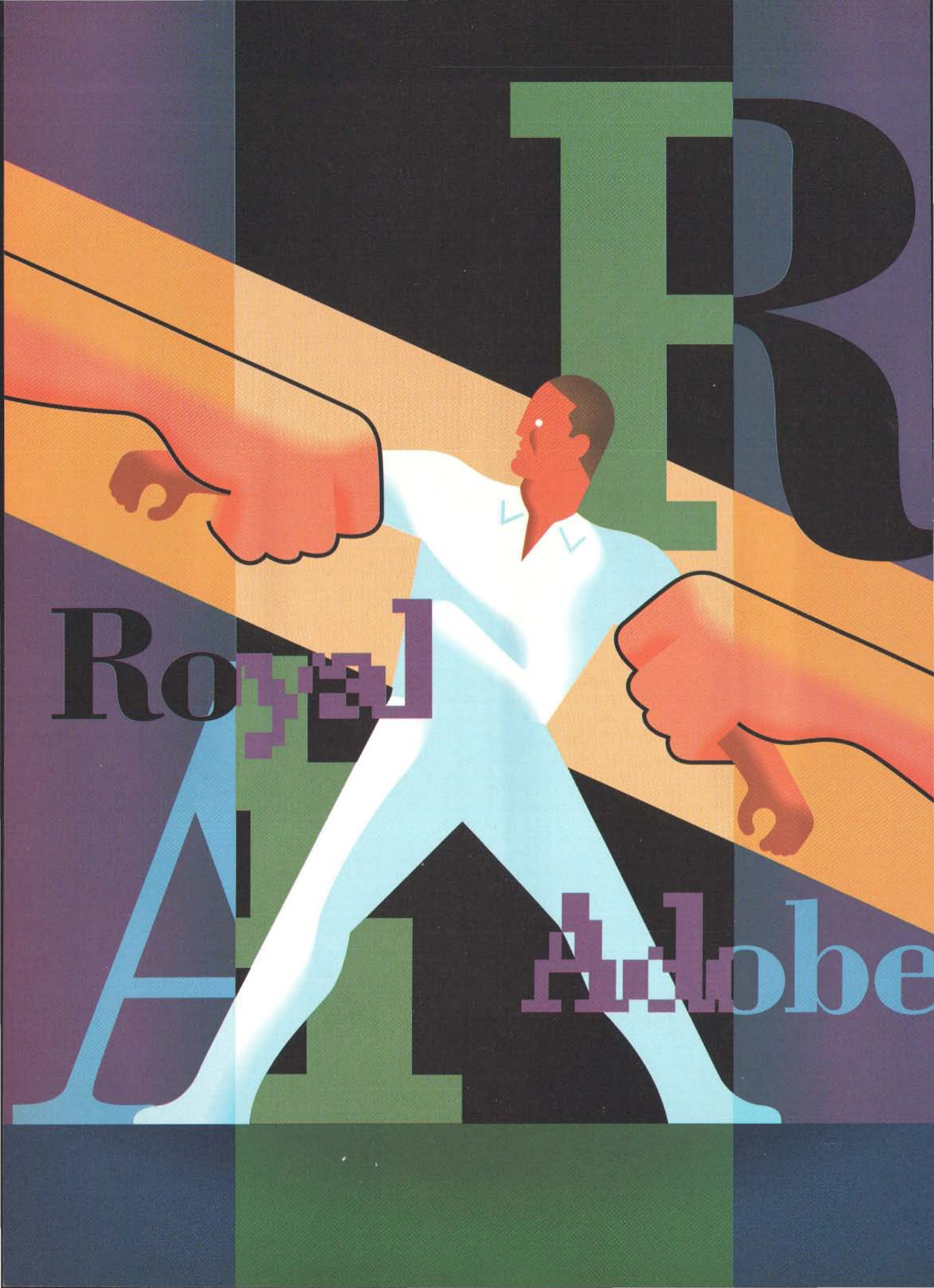
**Readers Will Wear This Shirt**



Neither the magazine nor the T-shirt are available yet, but you can wear our *GeekChic* button. Just cut along the dotted line, back with double-sided tape, and wear with pride.







TER

Royal

Autobee



# BATTLE ROYAL

*The impending release of Apple's Royal font format raises important questions for publishers and everyone else who uses Mac type. Does this challenge to the PostScript standard spell the beginning of chaos, or the end of a monopoly? A special report on the future of fonts.*

**J**ust when Mac publishers were getting the hang of PostScript fonts, Apple went and announced its own font format, dubbed Royal. Many Mac owners are confused by the prospect of dealing with two font formats. How do they differ? Will current PostScript fonts work with new Apple hardware and software? Will the new Apple fonts work with existing hardware and software? What if you already own a substantial library of PostScript typefaces—can you mix the two formats? If you're new to desktop publishing, should you put off buying typefaces and a printer until Apple's new format arrives?

In an attempt to answer these and other questions, I spoke recently with a number of type-industry experts, including the product manager of Apple's Imaging Systems Group, Jim Gable, and Kevin Wandryk, typographic business manager at Adobe Systems. Their analyses and comments help shed some light on what 1990 and beyond will hold for Mac publishers.

## **Font History: An Outline**

For those who haven't kept up with last year's dramatic font developments, here's a synopsis. Despite a long-running lawsuit over interface design, when it comes to font technology Apple and Microsoft have decided to bury the hatchet. In this case, they've buried it in Adobe's back.

The first blow came in the spring of 1988, when Apple announced it would use its own screen-display software rather than licensing Adobe's Display PostScript, a technology that would have made PostScript the standard for both screen display and output. Then Apple announced plans to develop its own outline fonts instead of sticking with Adobe's PostScript font format. In the summer of 1989, Apple sold its considerable holding of Adobe stock. The coup de grace came at a press conference last September: Apple and Microsoft announced an alliance that teams Apple's new font



technology with a PostScript-clone interpreter acquired by Microsoft. Apple's font technology will be incorporated in Microsoft's OS/2 Presentation Manager for screen display on IBM PCs and compatibles, and Microsoft's PostScript-clone interpreter will be included in future Apple laser printers. Because Microsoft and Apple now share a common font format, Mac and PC owners will be able to use the same font library and printers, resulting in greater compatibility between the two kinds of machines.

Keep in mind that Apple is not abandoning PostScript itself as a printing technology, but rather breaking

free of Adobe's implementation of PostScript. The interpreter Microsoft purchased uses Adobe's PostScript language but was independently developed by Bauer Enterprises. Apple has diverged from PostScript as a font format, however; Royal employs Apple's own method of describing character outlines.

To understand these developments it's useful to take a look at the history of the Apple-Adobe relationship. When the Macintosh was introduced, desktop publishing didn't exist. Then came the LaserWriter, which, in the opinion of many, saved the Mac's bacon, transforming the Macintosh from a novelty into a tool for producing professional-quality type and graphics. The LaserWriter contains Adobe's proprietary PostScript interpreter—software that receives PostScript instructions from an application and translates them into instructions that tell a printer where to lay the dots that make up a printed page. The Las-

erWriter also contains a set of built-in PostScript fonts created by Adobe and optimized for printing at 300 dots per inch. To use the PostScript fonts and interpreter, Apple—and later other printer manufacturers—had to pay royalties to Adobe.

Not all printer companies wanted to pay Adobe royalties, however, so some struck out on their own and developed their own PostScript interpreters, which eventually appeared in the so-called PostScript-clone printers and imagesetters. The clone manufacturers had access to Adobe's PostScript specifications, which were published in Adobe's *PostScript Language Reference Manual*. But the book didn't tell developers everything; clone interpreters were in development for years. When the PostScript-clone developers finally got their printers to work, they wouldn't print Adobe fonts. Why not? Because Adobe's fonts are encrypted, which means that only printers with a true Adobe PostScript

### **Garamonds Galore**

The faces on the left are printed at the relatively low resolution of 300 dpi, while the ones on the right are printed at 1270 dpi. The hints included in Type 1 faces improve their appearance somewhat on 300-dpi devices such as the LaserWriter, but this advantage disappears at higher resolutions.

#### **Type 1 PostScript, 300 dpi**

##### **ADOBE GARAMOND**

Garamonds Garamonds Garamonds

##### **GARAMOND 3 (ADOBE)**

Garamonds Garamonds Garamonds

##### **STEMPEL GARAMOND (ADOBE)**

Garamonds Garamonds Garamonds

#### **Type 3 PostScript, 300 dpi**

##### **GARAMOND ANTIQUA (AGFA COMPUGRAPHIC)**

Garamonds Garamonds Garamonds

##### **ITC GARAMOND BOOK (BITSTREAM)**

Garamonds Garamonds Garamonds

##### **SIMONCINI GARAMOND (THE FONT COMPANY)**

Garamonds Garamonds Garamonds

#### **Type 1 PostScript, 1270 dpi**

##### **ADOBE GARAMOND**

Garamonds Garamonds Garamonds

##### **GARAMOND 3 (ADOBE)**

Garamonds Garamonds Garamonds

##### **STEMPEL GARAMOND (ADOBE)**

Garamonds Garamonds Garamonds

#### **Type 3 PostScript, 1270 dpi**

##### **GARAMOND ANTIQUA (AGFA COMPUGRAPHIC)**

Garamonds Garamonds Garamonds

##### **ITC GARAMOND BOOK (BITSTREAM)**

Garamonds Garamonds Garamonds

##### **SIMONCINI GARAMOND (THE FONT COMPANY)**

Garamonds Garamonds Garamonds



interpreter can read them. Most printer companies got around this difficulty by using unencrypted fonts from font giant Bitstream.

### Give Me a Hint

Printer manufacturers weren't the only ones who chose alternatives to paying for Adobe's technology. In addition to licensing its PostScript interpreter to printer manufacturers, Adobe also licenses its font-creation technology to type manufacturers, such as Agfa Compugraphic, Autologic, Linotype, Monotype, Morisawa, and Varityper.

Adobe and Adobe-licensee fonts are known to digital typographers as *Type 1* fonts. These fonts, in addition to being encrypted, include proprietary scaling algorithms known as *hints*. Adobe's hints optimize the appearance of printed characters, making minute adjustments to produce even stem weights, consistent character heights, and other characteristics that make type look good at low resolutions. Adobe's hints work in conjunction with a *rasterizer*, software that converts an outline into a printed bitmap.

Many type designers create *Type 3* fonts, which are PostScript fonts without Adobe's hinting or encryption. ("Whatever happened to Type 2?" you might ask. On Adobe's evolutionary tree Type 2 was a branch that died off when a proposed technology didn't pan out.) Some companies use their own font-creation software; others use Fontographer, a font-creation program from Altsys Corporation. Like Type 1 fonts, Type 3 fonts can be downloaded to a PostScript laser printer or image-setter. While many Type 3 fonts don't look as crisp and clear as Adobe's hinted fonts when printed at low resolutions, the discrepancy disappears at high resolutions, where the grid of dots that makes up characters is composed of much smaller dots. (Note: Version 3.0 of Fontographer lets type designers add hints, but for the most part, the current crop of Type 3 fonts are unhinted.) "Garamonds Galore" compares Type 1 and Type 3 fonts printed at two different resolutions.

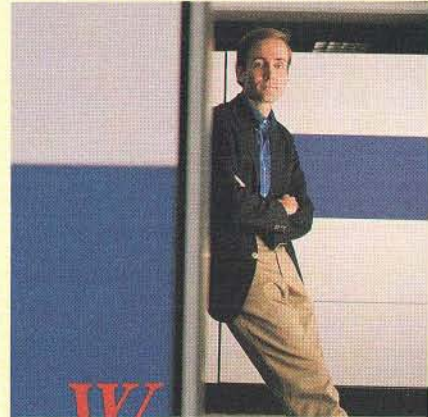
Some type designers—along with purveyors of Type 3 fonts, of course—contend that Adobe's hinting technology degrades the quality of traditional type designs because it regularizes let-

ters, for example, making stem weights even when in some cases there *should* be subtle differences in weight. Adobe's Kevin Wandryk admits that some of Adobe's earliest typefaces may have erred on the side of character regularization but insists that current designs adhere as much as possible—within a digital format—to the original type designs. "There's nothing in our font technology that mandates over-regularization," he says.

Some companies, such as Bitstream, use their own hinting strategies. Bitstream's *Type A* outline fonts, which are used with printers that employ Adobe's interpreter, don't include hints. Bitstream's *Type B* fonts, which are used with clone interpreters that employ Bitstream's Fontware scaling technology, include Bitstream's own hints; the company's *Type C* fonts, designed for PostScript-clone printers that use neither Adobe's nor Bitstream's scaling technology, contain no hints. Other companies argue that hints are unnecessary, since serious users will print final copy on high-resolution imagesetters and use 300-dpi printers mainly for proofing.

### 1 for All?

We'll see if any of Adobe's critics change their tune about the quality of Type 1 fonts when given the chance to create Type 1 fonts of their own. Last September, in a surprise response to the Apple-Microsoft announcements, Adobe declared that it would publish the specifications for Type 1 fonts, making these hitherto well-guarded secrets an option for any type designer—and theoretically making it possible for PostScript-clone printers to use Adobe's fonts. Keep in mind, however, that publishing the specifications is not the same as giving away source code; developers will still have



ROBERT HOLMGREN

**W**hen our fonts go into our new version of PostScript, they'll do anything PostScript fonts can do.

JIM GABLE  
MANAGER, APPLE'S IMAGING SYSTEMS GROUP

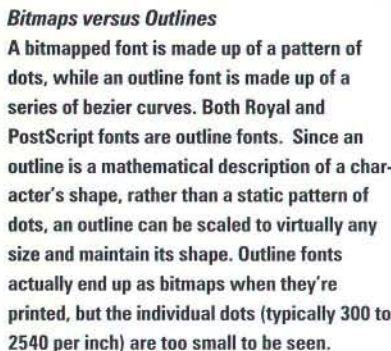
to do some work. Likewise, Adobe is not giving away the code for its rasterizer program. Adobe's chairman, John Warnock, compared the publication of the Type 1 specs to giving auto manufacturers the parts list for a Ferrari and leaving it up to them to figure out how to build the car.

Therefore, even after the Type 1 specs are published, Adobe will continue to license its Type 1 font-creation tools to interested type houses. So Adobe hasn't provided a completely open format, but it has opened the door a crack. Publishing the Type 1 specs now may turn out to be too little too late; a major selling point to developers considering Royal is that Apple's font format, unlike Adobe's, is completely open. Apple will provide the specifications for Royal fonts in the System 7.0 developers' notes. (For a preview of System 7.0, see *Macworld*, August 1989.)

### Royal Revealed

So, what is the Royal format? Basically, Royal fonts are outline fonts, as are the PostScript fonts you print on a LaserWriter today. Each character is made up of a series of lines, curves, and control points that describe its shape. As with current PostScript fonts,





**Inside Outlines**  
Each character in Apple's Royal format (top) has a series of attached instructions that optimize its appearance at various resolutions. Note that the quadratic curves that make up the Royal character require more control points than the cubic curves that make up a PostScript character (bottom). (I've dissected a Type 3 font here, since Adobe's character outlines are encrypted.)

Similar sizing dilemmas apply to other QuickDraw-based printers. To print high-quality text on Apple's

Another difference between PostScript and Royal fonts is in where you find a font's intelligence—the instruc-



tions that tell a printer which dots to fill in at various sizes and resolutions. Apple has chosen to build Royal's intelligence into the font itself; each character has a set of hinting instructions attached to it. "All the hard work happens in the font instructions," says Gable, "rather than at scan-conversion time [when instructions are sent to a printer]. Once the instructions are done, the pixels are filled in very quickly." Developers can choose how sophisticated they want to make their hints; high-level hints will most likely increase processing time. How the overall display and printing speed of Royal fonts compares to that of PostScript fonts remains to be seen.

Adobe's approach, on the other hand, is to put most of the scaling intelligence in the rasterizer. According to Kevin Wandryk, "We think that font designers' concerns are twofold: they're interested in the shape of a character and in how it's spaced relative to other characters. Learning a programming language to make characters shouldn't be the font designer's concern. Besides, when you put the intelligence in the rasterizer, the technology behind rasterizing can get better and better and the font data doesn't have to change."

### But Why a New Format?

Font format philosophizing is interesting, but it doesn't explain why Apple chose to forsake Adobe, especially for such a strange bedfellow as Microsoft. "The Microsoft agreement is really a technology exchange: our fonts for their PostScript," says Gable. "The benefit is that with a version of PostScript that has our fonts, not only will Apple be able to make better PostScript printers in the future, but we expect that third parties who license from Microsoft will also be able to make better PostScript printers for the Mac." In other words, Apple had a font format and Microsoft had a PostScript clone, and the result was a marriage of convenience.

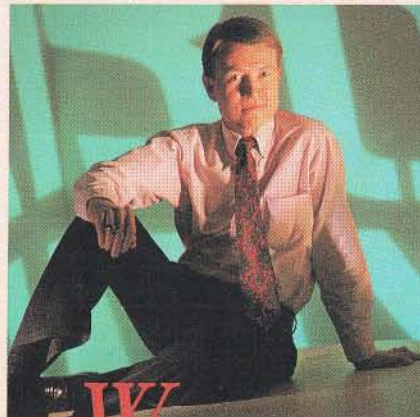
But Adobe's PostScript is a good printing solution, not to mention a well-entrenched standard. If it ain't broke, why fix it? Despite talk on Apple's part of improving quality and speed, most people agree that the real reason comes down to money—it's a

matter of Royal versus royalties. In combination with the Microsoft clone, the new font format is a way to get around the fees Adobe charges for its technology.

"I don't think anybody likes monopolies," says Louise Domenitz, Bitstream's director of corporate communications. "I think it's good that there's a second option in terms of an imaging model that incorporates attention to typographical needs. At first glance, it may seem like now there's something else to deal with—but I think what Apple is trying to do is raise the bottom line. Royal is a sophisticated format that allows for the preservation of typographic quality."

Agfa Compugraphic's marketing director Dan Richards is more straightforward in his assessment of Apple's decision. "I think Apple's saying to the world in general—and especially to Adobe—'We're not going to pay these high royalties to get a device. Not only are we not going to pay on the printer end, but we're not going to pay on the font end. And this is our answer because Adobe won't open up its technology.'"

Richards predicts that the price of both type and printers will fall as a result of increased competition. "Royal fonts will be considerably less expensive than current PostScript fonts because you won't have any royalties attached to them. And Adobe's font prices will probably drop as a result." As for printers, "It will be like the IBM PC all over again—someone comes out with a standard and everyone keeps doing it one better, and pretty soon it's the clones that are making all the money, not the originator. Adobe's PostScript will continue to be a standard, but I think in three to five years the clones will have more of the market than Adobe."



ROBERT HOLMGREN

*We think that because of the expertise we've gained over the last five or six years, Adobe will be able to compete based on the quality of our implementation of both PostScript and PostScript fonts.*

KEVIN WANDRYK  
TYPOGRAPHIC BUSINESS MANAGER, ADOBE

Not everyone is happy with Apple's introduction of a new format, however. Paul Beyer, the owner of a design and production company and a member of the board of the New York Professional PostScript Users Group, feels that introducing a new standard will slow down the improvement of the previous standard. "As a graphic designer and a user of high-level imaging technology, I have absolutely no interest in Royal," says Beyer. "Apple has dollar signs in its eyes; what this format allows Apple to do is bring a whole lower end to the PostScript market. They haven't penetrated a large part of the office market because their output devices have generally been too expensive. The technology exchange with Microsoft opens up a larger market by introducing a new PostScript standard—or PostScript deviation, I should say."

Beyer feels that because developers will have to learn a new format, fewer resources will be devoted to improving Adobe's PostScript. "Many of the commercial projects I take on really push the technology. We were getting to the point where we were starting to approach the capabilities





**F**rom our point of view, you can get significantly improved typography using the Royal technology, rather than Adobe's technology.

ROB FRIEDMAN  
PRESIDENT, BITSTREAM

of the high-end prepress systems. The Apple-Microsoft pact throws a monkey wrench in there. I have a system that works now; I don't want to take five steps backward and wait for Royal to catch up."

#### Adobe's Intermediate Solution

While Royal and System 7.0 have their proponents, the fact is neither is available now (at this writing, System 7.0 was reportedly scheduled for release in the late spring). Nor are the promised legions of Royal-format fonts here yet. And Jim Gable wouldn't comment on when we would be likely to see printers that include Microsoft's interpreter, either from Apple or from other companies.

In the meantime, Adobe hasn't been idle. Adobe Type Manager (ATM) has given us all a peek at what life will be like for all font users when System 7.0 arrives. (I'll describe the basics of ATM here; for a more detailed description, see the review in the February issue of *Macworld*.) Remember the earlier discussion of installing scads of screen font sizes for readable screen display and presentable printing? Well, Adobe's handy utility does away with all that. ATM takes scaling information from Type 1 PostScript fonts and ap-

plies it to characters displayed on the screen, producing sharp, legible type at virtually any size on the screen, as well as on QuickDraw printers (see "The Shape of Characters to Come").

To use ATM, you install it as a cdev (Control Panel device) and drag the outline fonts you want to use into the System Folder. You need to install only a single screen font for each typeface, and ATM automatically scales screen fonts to whatever size you specify. The results are impressive, both on screen and on paper. The \$99 utility includes four font families:

Times, Helvetica, Courier, and Symbol. A \$198 add-on package offers seven additional families. You aren't limited to this selection, however; ATM works with any Type 1 PostScript font.

System 7.0's font scaling has the additional advantages of not being limited to Type 1 fonts and of being built into the Mac's system software.

On the other hand, System 7.0 will require 2 megabytes of memory to run. Adobe Type Manager not only requires just 1MB to run, but it's up and running *now*, two decided points in its favor. (At least one company isn't waiting around for Adobe to publish its Type 1 specs in order to offer ATM-compatible fonts. The Font Company claims to have created Type 1 fonts without the benefit of Adobe's specs; according to a Font Company representative, these new fonts work with Adobe Type Manager.)

#### Apple or Adobe—or Both?

Despite the Apple-Microsoft pact, Adobe's PostScript isn't about to dry up and blow away. PostScript is built into printing devices from dozens of companies and is the format for hundreds of typeface families from numerous manufacturers. So it looks as if we'll be stuck with two standards.

Many Mac owners are dismayed by the prospect of two font standards, but compared to the current labyrinth of font formats, a mere double standard may not be so bad. Right now, we've got bitmapped fonts, outline fonts, PostScript printer fonts, QuickDraw printers with bitmapped fonts, and QuickDraw printers (from GCC) with outline fonts. There are fonts that work only in LetraStudio and fonts that work only on specific printers. Apple's

One size fits all  
One size fits all  
One size fits all

One size fits  
One size  
One si  
One

One size fits all  
One size fits all  
One size fits all

One size fits  
One size  
One si  
One

#### The Shape of Characters to Come

Adobe Type Manager (right) vastly improves the appearance of displayed text, as well as text printed on QuickDraw-based printers. System 7.0 will also scale displayed characters automatically, saving you the trouble of installing numerous sizes of screen fonts.



Jim Gable admits, "Frankly, [fonts] are kind of a mess. Professional users are used to it, but new users can't figure this stuff out. I think it's going to be better to have two formats than to have six or seven."

Since PostScript is here to stay, how will users cope with the existence of two formats? Once the dust settles, you'll be able to choose which format suits you—or possibly even opt for both formats.

Gable assured me that "one objective of System 7 is to be backward-compatible. The way System 7 is built, all the old font structures and printing structures are still there, and we have new ones next to them. We can guarantee that PostScript fonts will work the way they do today."

Gable also claimed Royal fonts will work with existing printers—including PostScript printers—although he was unable to explain exactly how. "Apple's engineers are looking at different options. Basically, we'll do a translation in the Macintosh and send out whatever kind of font a given printer can understand. The techniques for conversion will vary, but in general we're doing it in our printer drivers." In addition to Apple's efforts, Adobe is working on a utility that converts Royal fonts to PostScript for printing.

According to Gable, "If you go out and buy a font in the new format from, say, Linotype, we want you to feel comfortable that it will print to any printer—a PostScript printer, a Color-Quick printer from Tektronix, a film recorder from Mirus . . . one font does it all. We're doing things in our printer drivers where we need to, and in the System itself where we need to, in order to make fonts work on everything from the least expensive to the most expensive machines."

Although PostScript fonts will work as they do now, whether ATM—which apparently plays a little loose with Apple's developer guidelines—will work under System 7.0 remains to be seen. "ATM is kind of a ringer," says Gable, "and we don't really know too much about how it works. Our solution for ATM is that we're going to seed Adobe [with the new System] like we seed everybody else, and then they can revise ATM to work under

System 7." In other words, it will work if Adobe can make it work.

Other compatibility questions arise. For example, will PostScript fonts print on the new Apple-Microsoft clone printers? Don't bet on it. Also in the realm of speculation is whether Royal fonts will work with other PostScript-clone printers and typesetters, programs such as PageMaker that use their own printer drivers, and PostScript graphics programs such as Aldus Free-Hand and Adobe Illustrator. According to Gable, Royal theoretically poses no problem for any of these. We'll have to wait until later this year to see how well theory translates to reality.

How Royal fonts will compare to PostScript fonts with respect to such attributes as the file size, display speed, and printing speed remains to be seen, since only prototypes of Royal fonts exist at this writing. Quality will also have to be judged later. And quality may well vary from one type vendor to another; Apple is providing third parties with what developers generally acknowledge to be excellent font-making tools, but it is up to type manufacturers to use the tools to their potential. As Adobe's Wandryk points out, "The companies who are fastest in getting fonts to market may do so at the expense of quality."

Although Gable refused to comment on future Apple printers, he claimed that "when Apple's fonts go into our new version of PostScript, they'll do anything PostScript fonts can do."

A bold claim indeed, and at this point I have to agree with Adobe cofounder John Warnock that Apple and Microsoft "had better put up or shut up." Apple's new hardware and



**As a designer, what I want is better output, better color, and a better technology base for PostScript. That's not going to happen if developers focus their energies on what's already been done. Anybody who's got a significant investment in PostScript technology stands a large chance of being hurt by what Apple and Microsoft are doing.**

**PAUL BEYER**  
PRESIDENT, NEW YORK PROFESSIONAL POSTSCRIPT  
USERS GROUP

JONATHAN LEVINE

software is still under development, while PostScript is alive and well. If you are considering investing in fonts, PostScript is still the way to go—unless you've got plenty of time to wait. The number of PostScript fonts continues to mushroom and ATM provides a great step forward in convenience. (Look in *Where to Buy* under "Fonts" for a list of PostScript type vendors.)

With any luck, the font wars won't cause too many civilian casualties. Despite their differences, it's in neither Apple's nor Adobe's best interest to make things hard on the user. And despite the current confusion, Mac users may actually profit from the font feud. In the best-case scenario, the number of available faces will go up and competition will drive font and printer prices down. As they say, stay tuned for further details. ■

.....  
*Erfert Fenton* is a Macworld contributing editor and the author of *The Macintosh Font Book* (Peachpit Press, 1989).



**More  
For  
Your**

# *Memory*

**Tips and strategies  
for getting the most from the  
Mac's memory**

**M**emory is like money: you can't have too much and you never seem to have enough. Where money is concerned, that means living within your means—scrimping instead of splurging, window shopping instead of store hopping, and choosing discounts over Dior.

Ditto with memory. You may long to run the latest designer programs, but if your Mac has only a megabyte or two of memory, they may not fit your memory budget. Time was when 1MB was a fortune you couldn't spend in a lifetime. Today, it's lunch money.

Blame it on software inflation. Today's applications are larger and more complex than yesterday's. They do more, but they need more room to do it. The Mac's system software is growing, too, as it keeps pace with increasingly complex hardware. When System 7.0 arrives this year, you'll need 2MB to run it.

**by Jim Heid**





1  
MEG  
MEMORY BANK

WIT

128 K

SYSTEM  
7.0

ACCESSORIES

DISCOUNT

NEW

NOW  
LESS  
"K"

CLOSE

MEMORY  
LINE



As applications that take full advantage of System 7.0's features appear, 4MB may become cramped. The more you have, the more you want.

Although memory-chip prices are falling, thousands of Macs are still running with only 1MB in their bank account. And not just Pluses and SEs, either. The pricey Macintosh Portable includes a mere megabyte and it has champagne tastes, requiring exotic static RAM chips that cost \$649 per megabyte.

How do you keep a 1MB Mac alive in a multimegabyte world? By fine-tuning your system and your software to get the most out of the memory you have. The techniques I'll describe here work on Macs of all sizes, so you owners of multimegabyte machines can benefit, too. For an introduction to basic memory terms and concepts, see "Getting Started with Memory," in this issue.

### System Software: Supporting the Bureaucracy

Just as part of your income goes to supporting the government, part of a Mac's memory goes to accommodating the fundamental software required to run the Mac. If you are running MultiFinder on a 1MB Mac, you're in the 40 percent tax bracket: of your 1MB, only about 600K remains free for your own use.

But as any clever taxpayer knows, you can control how much you pay. Here are several loopholes that can lower your system software tax.

- Don't use MultiFinder. Use the Finder's Set Startup command to specify that the Mac start up with the Finder instead. You'll gain an extra 160K of memory—enough to allow a 1MB Mac to run memory lovers like HyperCard, Ashton-Tate's Full Impact, Ietraset's ImageStudio, and Farallon's SoundEdit. And if you equip your Apple menu with a selection of desk accessories, you'll minimize application switching and still be able to do a few things at once.

- Disable background printing. PrintMonitor, a small application in the System Folder, lets you use MultiFinder to print to a LaserWriter in the background, but PrintMonitor requires 72K. If you can't do without MultiFinder, you can at least reclaim 72K when printing by using the Chooser to disable background printing. This also prevents the "There is insufficient memory to print at this time" message, which PrintMonitor displays when there isn't room for it to run.

- Open desk accessories in an application layer. When you open a desk accessory while using MultiFinder, the Mac loads a system file called DA Handler, which uses about 18K and provides a layer in which desk

accessories run. If you're low on memory, press the Option key while choosing the desk accessory's name from the Apple menu. This bypasses DA Handler and opens the desk accessory within the current application's layer. Another plus: the accessory opens faster since the Mac doesn't have to load DA Handler.

- Don't use a disk cache. The Control Panel's RAM cache option boosts performance but uses memory. After turning off the RAM cache, restart the Mac to put the change into effect.

- Use the appropriate system software version. By running the system version Apple recommends for your Mac, you won't waste memory on system routines the Mac doesn't need (see "What's Your Version Number?"). This is especially important for elderly Macs such as the 512K and 512K Enhanced. For example, if you start a 512KE with a System 6.0 disk, you'll have a scant 170K free. Start the same Mac with a System 3.2 disk—the version Apple recommends for that machine—and you'll have 274K free.

- Consider using an older version of the System. Recent versions use more memory than older ones. You can save some memory by using an older version—provided it's compatible with your Mac. For example, System 6.0.2 leaves about 647K free on a 1MB SE, but System 4.1 (released in April 1987) leaves 724K free. But be forewarned: you may not be able to run recent applications that require the latest System. Check your programs' manuals to see which version they require, and use this technique as a last resort only. Finally, be sure to use all the system files that accompanied the older version. For example, don't replace a newer version of the System file with an older version without replacing the Finder file, too.

### INITs: Luxuries That'll Cost You

Everyone likes to splurge on a luxury item now and then. But luxuries do erode the bank balance, meaning that there's less left over for necessities. INITs—pieces of software that load when the Mac starts up—are the luxury items of the Mac world. They enhance the Mac's operation by providing such features as electronic mail and customized keyboard shortcuts

## THE PRICE OF LUXURY

INIT Name	Developer	Purpose	Memory Used
TOPS 2.1	Sun Microsystems	Network file server	110K
Timbuku 3.0	Farallon Computing	Network remote control	107K
QuickMail 2.0	CE Software	Network electronic mail	82K
Microsoft Mail 2.0	Microsoft	Network electronic mail	80K
MacroMaker 1.0.1	Apple Computer	Mouse and keyboard automation	50K
MasterJuggler 1.5	AI-Soft	System resource management	48K
QuickKeys 1.2	CE Software	Mouse and keyboard automation	33K
Tempo II 1.02	Affinity Microsystems	Mouse and keyboard automation	25K
Shortcut 1.0	Aladdin Systems	File locator	20K
SuperLaserSpool 2.0	SuperMac Technology	Print spooler	16K
AppleShare 2.0.1	Apple Computer	Network file server access	15K
Suitcase II 1.2	Fifth Generation Systems	System resource management	12K
Pyro 3.0	Fifth Generation Systems	Screen blanker	3K
SuperClock 3.3	Steve Christensen	Menu bar clock and stopwatch	2K
Capture 2.0	Mainstay	Screen image capture	2K
Easy Access 1.0	Apple Computer	Keyboard control of pointer	1K



(see "Start with Utilities," *Macworld*, October 1989, and "Getting Started with Utilities," February 1990). But every INIT you use reduces the memory available for applications.

Here are some ways you can balance an appetite for luxuries against the need to pay the bills.

- Think twice about running memory-hungry INITs on a 1MB system. Examples of such INITs include system resource managers such as Suitcase II and MasterJuggler, electronic mail software such as QuickMail and Microsoft Mail, and network software like TOPS and Timbuktu. If you can't live without one or more of these products, you'll almost certainly need to forgo MultiFinder to avoid going broke. Even then, you'll need to limit yourself to applications that use memory sparingly. "The Price of Luxury" lists the memory requirements of numerous INITs.

- Disable one or more INITs when you need extra memory. One way is to open the System Folder and drag the INITs out onto the desktop (not to the Trash). To tell the INITs apart from the other System Folder files, use the Finder's By Kind command; each INIT is labeled as a Startup document. Restart the Mac after dragging the INITs out of the System Folder.

For an easier way to disable INITs, use an INIT-management utility such as CE Software's Aask (part of the MockPackage Plus Utilities collection), Microseeds Publishing's INITPicker, or Natural Intelligence's Inix (see *Reviews, Macworld*, October 1989). Aask displays the approximate amount of memory required by each INIT, making it easy to determine which ones are worth disabling.

#### Applications: When Smaller Is Better

It helps to cut the tax bill and go light on luxuries, but a smart money manager also shops carefully for the basics. Bargain hunting, discount shopping, even price dickering—these are the best ways to stretch your money.

Similar techniques apply to stretching memory. The memory equivalent of bargain hunting involves choosing applications that use memory sparingly. Of the programs in a given category, some need more memory than others. For example,

WHAT'S YOUR VERSION NUMBER?		
Macintosh Model	Recommended Versions	Acceptable
128K	System 2.0/Finder 4.1	
512K	System 3.2/Finder 5.3	
512KE	System 3.2/Finder 5.3	System 4.0/Finder 5.4
	System 3.3/Finder 5.4	System 4.1/Finder 5.5
	System 3.4/Finder 6.1 (for use with AppleShare)	
Plus	System 6.0.2/Finder 6.1	System 3.2/Finder 5.3
	System 6.0.3/Finder 6.1	System 3.3/Finder 5.4
	System 6.0.4/Finder 6.1	System 4.0/Finder 5.4
		System 4.1/Finder 5.5
		System 4.2/Finder 6.0
SE	System 6.0.2/Finder 6.1	System 4.0/Finder 5.4
	System 6.0.3/Finder 6.1	System 4.1/Finder 5.5
	System 6.0.4/Finder 6.1	System 4.2/Finder 6.0
SE/30	System 6.0.3/Finder 6.1	
	System 6.0.4/Finder 6.1	
II	System 6.0.2/Finder 6.1	System 4.1/Finder 5.5
	System 6.0.3/Finder 6.1	System 4.2/Finder 6.0
	System 6.0.4/Finder 6.1	
IIfx	System 6.0.3/Finder 6.1	
	System 6.0.4/Finder 6.1	
IICx	System 6.0.3/Finder 6.1	
	System 6.0.4/Finder 6.1	
IICI	System 6.0.4/Finder 6.1	
Portable	System 6.0.4/Finder 6.1	

Microsoft Word runs comfortably in 512K. But Ashton-Tate's portly FullWrite Professional, with its kitchen-sink mix of features, barely fits within 1MB and all but demands 2MB.

Until customers demand otherwise, the software industry will keep on giving priority to adding features instead of reducing memory requirements. When was the last time you saw a new version of a program debut not with new features but with reduced memory requirements?

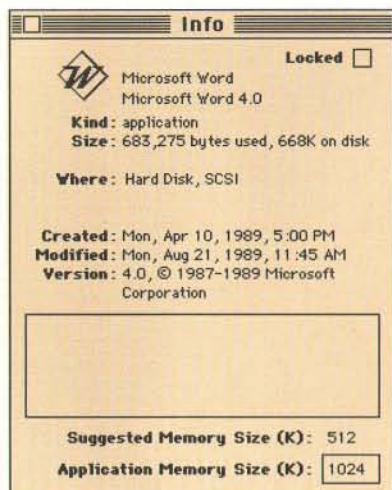
But some programs do use memory sparingly.

- For word processing, T/Maker's WriteNow is the unchallenged cham-

pion of memory conservation. It's the only currently shipping word processor I know of that runs on every Mac ever made—even the primordial 128K (if you want to use the program's spelling checker, you'll need 200K). And WriteNow compares favorably with its more corpulent competitors (see "Write, Write, Write," *Macworld*, October 1989).

- For spreadsheet analysis, check out Bravo Technologies' MacCalc. It runs on all Macs from the 512K (enhanced or not) on up and needs just 256K. It's fast, well designed, and packed with features. And its \$139 price can't be beat.





■ For database management, a good choice is Software Discoveries' Record Holder Plus, which requires just 300K. Claris's FileMaker II provides more-complete form-design, scripting, and networking features and runs in

### Memory Suggestions

When you choose the Get Info command for an application, the bottom of the Finder's Get Info window displays two memory values. Suggested Memory Size represents the minimum amount of memory the developer recommends (although not necessarily the minimum amount of memory in which the program will run). Application Memory Size reflects the ideal amount of memory. By lowering the latter value, you can reduce a program's memory requirements.

as little as 350K. Microsoft File is a capable filer that runs in as little as 200K. It offers excellent color support and works well with Microsoft Word's print merge features.

■ For personal-finance management, consider Intuit's Quicken. It packs check writing, checkbook balancing, budgeting, and tax record keeping into a compact application that uses only 375K and runs on unenhanced 512K Macs.

■ For graphics, well, good luck. Graphics programs are inherently memory hungry. For example, Silicon Beach Software's SuperPaint 2.0 needs 700K, and Claris's MacDraw II and

MacPaint 2.0 need 537K and 352K, respectively. And for MacDraw and MacPaint those figures are bare minimums that limit your document size and the number of documents you can open simultaneously. One noteworthy alternative is the DeskPaint and DeskDraw combination from Zedcor—two desk accessories that pack impressive painting and drawing features into the Apple menu.

How can you tell how much memory a program needs? It isn't easy. Software firms rarely list minimum memory requirements on their boxes. They tell you if a program runs on a 1MB machine, but they don't say how much of that 1MB the software actually uses. Determining that requires some detective work on your part.

## SLEUTHING THE SIZE RESOURCE

**H**ow little memory can you safely allocate to an application? To find out, use ResEdit to examine the application's SIZE resource as follows.

1. Start the Mac using the Finder, not MultiFinder. ResEdit is more reliable when you don't use MultiFinder.

2. In ResEdit's directory window, double-click on the name of the application whose SIZE resource you want to examine. (For safety's sake, work with a backup copy of the application, not the original.) A window appears listing the resources in that application.

3. Locate the SIZE entry and double-click on it. Another window appears containing an entry labeled SIZE ID=-1. SIZE ID=0 may also appear. This second entry is a SIZE resource added by the Finder and indicates that someone has adjusted the application's memory size using the Get Info command. The SIZE ID=0 resource overrides the SIZE ID=-1 resource.

4. Open the SIZE ID=-1 resource by double-clicking on it. A new window appears displaying the contents of the resource. Don't change any entries; you're here to observe only.

5. Scroll to the bottom of the window and locate the two entries labeled Size and Min size (see "Inside SIZE"). The Size value corresponds to MultiFinder's suggested memory size. The Min size value represents the smallest amount of memory in which the application can reliably run. This value is in bytes; to convert it into kilobytes—the format required by the Get Info window—divide it by 1024. For example, the value 393216 represents 384K. Write down this minimum number.

6. Quit ResEdit. If you're asked to save changes, answer No.

7. Use the Finder's Get Info command to change the application memory size to match the minimum value you wrote down in step 5. Close the Get Info box to save your changes. At this point, you may want to start the Mac under MultiFinder and test the application's performance by opening it and performing the tasks you usually perform.

### Sizing Up Software

If a computer dealer will let you experiment, you can use two techniques to determine a program's memory requirements. The easiest technique involves selecting the application's icon and then choosing the Finder's Get Info command. Two values appear at the bottom of the Get Info window: the program's suggested memory size, the minimum amount its developer recommends, and its application memory size, the ideal amount its developer recommends (see "Memory Suggestions").

The suggested memory size is usually less than the application memory size. Sometimes, however, the two values are the same, as is the case with SuperPaint 2.0, MacWrite II, and FileMaker II, to name a few. In any case, the suggested memory size is the value to watch, since it reflects a realistic minimum. The suggested memory size is the minimum amount of memory the developer recommends for acceptable performance and reliability. Don't confuse this with the *minimum memory size*—a more dubious figure indicating a theoretical minimum that may yield poor performance or prove unreliable.



Both the *application memory size* and the *suggested memory size* come from a *resource* stored within the application file. This resource, aptly named SIZE, contains information that the Mac uses to determine how the program runs under MultiFinder.

When you start a program, MultiFinder consults the program's SIZE resource to determine how much memory the program would like to have and how much it will settle for if that ideal amount isn't available. If less than the ideal amount is available, MultiFinder determines if at least the minimum amount is available. If it is, a dialog box appears asking if you want to run the program within that amount. If even the minimum amount isn't available, MultiFinder informs you that the program couldn't be opened and suggests quitting another application to free up memory.

"Sleuthing the SIZE Resource" describes how to examine an application's SIZE resource by using Apple's ResEdit utility. ResEdit is available through APDA (the Apple Programmer's and Developer's Association) and also through user groups and on-line services such as CompuServe.

### Dickering with Applications

You can't change an application's suggested memory size (actually, you can with ResEdit, but the application may rebel). However, you can change the application memory size by simply typing a new value in the Get Info window. By lowering the application memory size, you talk the program into accepting less memory. It's price dickering, software style, and it increases your chances of being able to run your favorite programs simultaneously under MultiFinder.

But how much of a change should you make? That depends.

- If the application memory size is greater than the suggested memory size, you can safely reduce the application memory size to match the suggested memory size.

- If both memory-size values are identical, you can try reducing the application memory size, but the program may not run reliably. Because the potential for problems exists, the Finder asks for verification when you supply an application memory size

Application	Suggested Memory Size	Application Memory Size	Minimum Memory Size	Disk Space
Aldus FreeHand 2.0	750K	1200K	700K	700K
Aldus Persuasion 1.0	800K	800K	800K	753K
Aldus PageMaker 3.0	700K	700K	700K	890K
Business Filevision 1.5	288K	288K	148K	286K
Business Sense 1.0	512K	512K	384K	256K
CA-Cricket Draw 1.1.1	768K	768K	668K	313K
CA-Cricket Paint 1.0	1000K	1000K	750K	318K
CA-Cricket Presents 1.0	1024K	1024K	1024K	528K
DiskFit 1.5	512K	512K	448K	181K
FileMaker II 1.1v2	512K	512K	350K	393K
FoxBase+ /Mac 1.0	1024K	1024K	1024K	568K
Full Impact 1.0	1024K	1024K	1024K	522K
FullWriteProfessional 1.0	1124K	1124K	1024K	773K
Graphist Paint II	1611K	1611K	1514K	156K
LaserTalk 1.1	500K	500K	375K	177K
MacCalc 1.2d	272K	304K	256K	182K
MacDraw II 1.1	900K	900K	537K	467K
MacPaint 2.0	512K	512K	352K	147K
MacProject II 1.0	384K	384K	256K	209K
MacWrite II 1.1v1	800K	800K	590K	451K
Mathematica 1.2	3072K	3072K	512K	679K
Microsoft Excel 2.2	1024K	1024K	512K	728K
Microsoft File 2.0	384K	384K	200K	201K
Microsoft PowerPoint 2.0	800K	800K	380K	401K
Microsoft Word 4.0	512K	1024K	384K	668K
Microsoft Works 2.0	768K	768K	224K	587K
Modern Artist 2.0	1200K	1200K	1200K	249K
More II 2.0	1024K	1024K	700K	733K
Nisus 2.02	700K	900K	700K	555K
Panorama 1.0	976K	976K	512K	320K
PixelPaint 2.0	2560K	1800K	1800K	762K
Plus 1.1	1953K	1953K	1953K	548K
QuarkXPress 2.0	992K	992K	992K	762K
Quicken 1.5	375K	375K	375K	201K
ReadySetGo 4.5	1024K	1024K	800K	506K
ReadySetShow 1.0	800K	800K	800K	458K
Record Holder Plus 3.1	300K	300K	300K	187K
Reflex Plus 1.0	350K	350K	350K	251K
SoundEdit 2.0	1024K	1024K	256K	262K
Springboard Publisher II	900K	900K	600K	625K
SuperCard 1.0	735K	1600K	735K	345K
SuperPaint 2.0	700K	700K	700K	505K
WordPerfect 1.0.2	600K	600K	400K	317K
WriteNow 2.0	400K	400K	200K	102K

that's below that suggested memory.

What are the effects of reduced memory sizes? The program will probably run slower, and it will access the disk more frequently as it loads and discards portions of program code in order to fit within its cramped confines. If the program keeps open docu-

ments entirely in memory (Microsoft Works and drawing and painting programs do), you'll be restricted to smaller documents, and you won't be able to have as many documents open simultaneously.

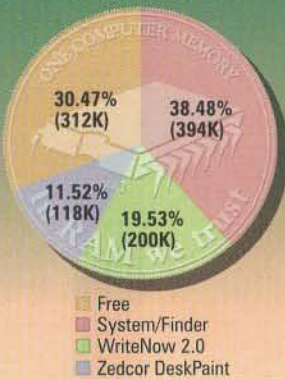
Incidentally, if you can spare the memory, you can boost a program's



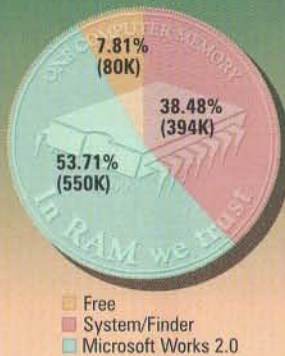
# TEAMS FOR COMMON TASKS

Shown as a percentage of total RAM. Actual memory shown in parenthesis

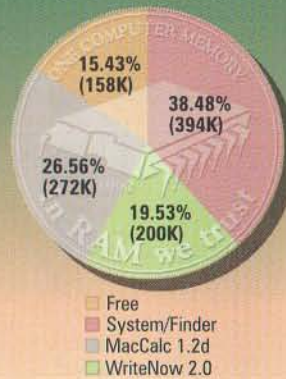
## Word Processing with Bitmapped Graphics



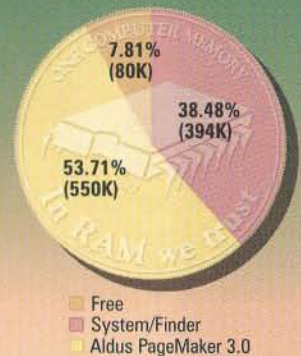
## Integrated Application



## Word Processing with Spreadsheet Analysis



## Desktop Publishing



Here are four ways you can combine programs under MultiFinder to perform common tasks. The numbers in parentheses following each program indicate how much memory you should give that program using the Finder's Get Info command. (Technically, PageMaker's minimum memory requirement is 700K, but the program appears to run reliably in 550K. You might also consider Timeworks' Publish It for desktop publishing; it even runs on a 512KE Mac.) For tasks requiring database management, such as producing personalized form letters, consider an integrated package such as Microsoft Works, or Software Discoveries' Record Holder Plus, which can run in as little as 300K. Note that you may need to fine-tune some memory values depending on your system configuration. For example, if you want to use MultiFinder's background printing option, be sure that at least 80K remains free. The 394K value for the System and Finder assume the use of the System 6.0.2 minimal installer script for a 1MB Mac SE.

performance by giving it more memory. For programs that keep open documents in memory, this lets you create larger documents and have more of them open simultaneously.

### Putting Theory into Practice

It's easy to talk about experimenting with memory size, but many people lack the time or inclination to do so. For this group, "Application Memory Sizes" lists the memory-size values of popular programs, and "Teams for

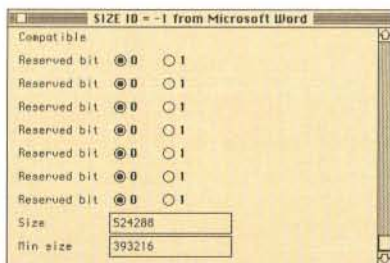
Common Tasks" lists some program combinations, memory size, and disk space requirements for popular tasks.

I've concentrated on memory limitations here, but disk space may also be a factor. If you don't have a hard disk, you need to do some careful organizing to be able to store programs, system files, and documents. Your job will be relatively easy if your Mac has 1.4MB SuperDrive floppies and downright daunting if it has the original 400K drives. The Mac's system software includes an installation program that creates a stripped-down System Folder designed for floppy-only systems. In the System Update 6.0 package, these minimal installers are on the Macintosh Utilities Disk 1.

Finally, a word to owners of unenhanced 512K Macs: upgrade. The shadow of obsolescence is fast approaching; soon you may have no new programs to choose from. Upgrading to a 512KE opens the doors to many popular applications. A Plus upgrade is better still, although you can buy a 512KE upgrade and add a non-Apple

SCSI port and memory upgrade to get a cheaper equivalent of a Plus (see "Is Your Mac Obsolete?" in the February 1990 issue). The same do-it-yourself price advantages apply to upgrading a 128K Mac.

Is it right for software firms to continue releasing ever-larger programs with more and more features? Yes, if that's what customers want. But companies should be up front about listing memory requirements. The minimum amount of memory required for a program should appear on its box, allowing you to determine whether a program will be able to coexist under MultiFinder with the other programs you run. After all, you can't put a system together unless you know whether its pieces are going to fit. **M**



### Inside SIZE

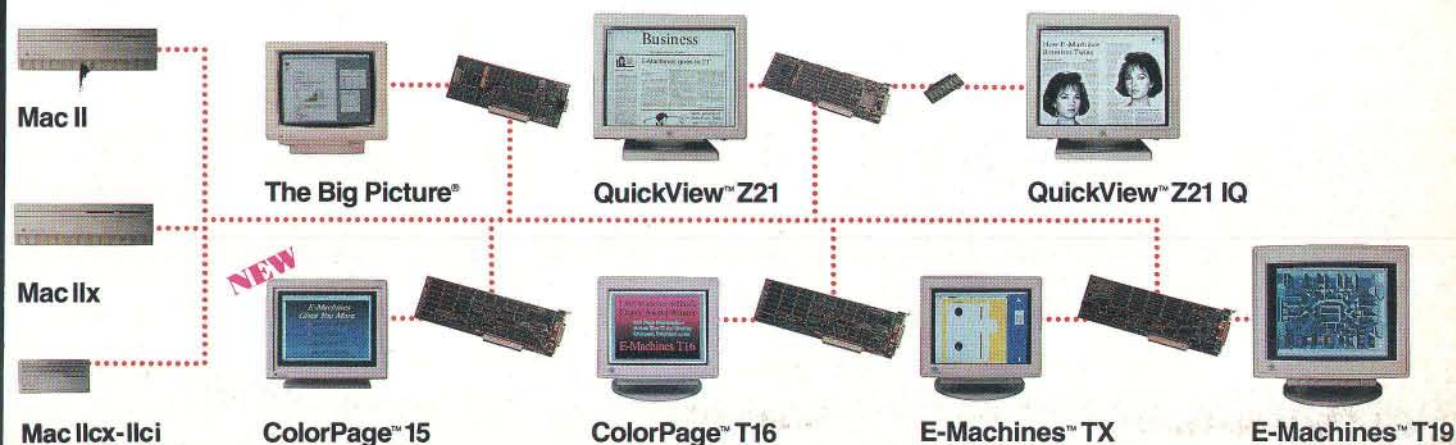
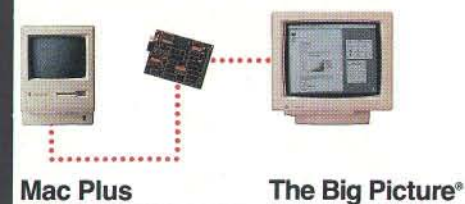
In the SIZE resource, the Size value corresponds to MultiFinder's suggested memory size. This value is in bytes; divide the Min size value by 1024 to convert it to kilobytes.

**Jim Heid** is a Macworld contributing editor and columnist. He recently coauthored *Inside the Apple Macintosh* (Brady, 1989) with Peter Norton. He would like to thank Dennis Cohen for technical assistance with this article.



# More Choice . . .

For  
Every  
Macintosh



A Complete Family of  
Monochrome, Gray Scale  
and Color Display Systems

Find out where to buy  
**Call (800) 34-GRAPHIC**

 **E-MACHINES**  
Power to See Your Best

Circle 101 on reader service card

9305 SW Gemini Drive, Beaverton OR, 97005 (503) 646-6699  
©1989 E-Machines. E-Machines and ColorPage are trademarks of E-Machines, Inc.





Scott Watson's incredible successor to the legendary Red Ryder program. The new features list runs over 20 pages. Now comes with Okyto, a revolutionary Mac to Mac file transfer program.

**White Knight Ver. 11.04 by FreeSoft \$85.00**



MacEnvelope 4.1 is an envelope/label printing program incorporating postal bar coding to speed delivery and sale on postage for large mailings. MacEnvelope plus for large list management with a list capacity of 100,000 names.

**MacEnvelope 4.1, ... \$85.00**  
**and MacEnvelope Plus, ... \$179.00 by Synex**



Use MICRO PLANNER to get a clear picture of their schedule, budget or other data using bar graphs, histograms, progress reports and more. Import and export from popular programs.

**MICROPLANNER by MICRO PLANNING INTERNATIONAL ... \$325.00**

## PROGRAMS PLUS

FAX: 203/381-9043  
Inquiries: 203/378-3662  
75 RESEARCH DRIVE  
STRATFORD, CT 06497

**1/800/832-3201 (USA)**  
**1/800/344-7753 (Canada)**

### Utility Software

<b>1st Aid Software</b>	
Complete Undelete, . . . . .	37.
<b>Abbott Systems, Inc.</b>	
CanOpener v1.1, . . . . .	65.
<b>Affinity Microsystems</b>	
Tempo II, . . . . .	75.
<b>Aladdin Systems</b>	
Shortcut, . . . . .	46.
<b>ALSoft</b>	
Master Juggler or Disk Express II, . . . . .	64.
Font/DA Juggler Plus, . . . . .	42.
<b>Berkeley System Design</b>	
After Dark, . . . . .	25.
Stepping Out II, . . . . .	50.
<b>Caere</b>	
Omnipage, . . . . .	545.
<b>Casady &amp; Greene, Inc.</b>	
QuickDex 1.4A, . . . . .	31.
<b>CE Software</b>	
QuickKeys or DiskTop v4.0, . . . . .	64.
MockPackage Plus Utilities, . . . . .	42.
Calendar Maker, . . . . .	32.
<b>Central Point Software</b>	
Copy II Mac v7.2, . . . . .	22.
<b>Dantz Software Development</b>	
Retrospect v1.1, . . . . .	149.
<b>Dayna Communications</b>	
DosMounter, . . . . .	55.
<b>Dubl-Click</b>	
Calculator Construction Set v2.0, . . . . .	45.
<b>Fifth Generation Systems</b>	
FastBack II or DiskLock, . . . . .	107.
Suitcase II, . . . . .	44.
<b>HJC</b>	
Virex, . . . . .	59.
<b>Icom Simulations</b>	
On Cue, . . . . .	35.
<b>Insight Development</b>	
MacPrint v1.2, . . . . .	95.
<b>Jam Software</b>	
Smart Alarms W/ Appt., . . . . .	49.
<b>Kont Marsh</b>	
KnightWatch, . . . . .	87.
<b>Loop Software</b>	
PictureBook, . . . . .	39.
<b>Magic Software</b>	
Auto Save II, . . . . .	28.
POWERICONS or POWERmenus, . . . . .	39.
Back-Matic, . . . . .	49.

**Now on Compuserve-  
GO PP Genie-GOPP**

<b>MainStay</b>	
Capture, . . . . .	45.
Mac Flow 3.0, . . . . .	125.
Mac Schedule v2.0, . . . . .	129.
<b>Microlytics, Inc.</b>	
GOler v2.0, . . . . .	45.
<b>Microseeds</b>	
INITPicker, . . . . .	27.
ScreenGems, . . . . .	39.
<b>Olduvai Software</b>	
MultiClip, . . . . .	50.
<b>ON Technology</b>	
On Location, . . . . .	75.
<b>Peripheral Land</b>	
TurboCache or TurboSpool, . . . . .	69.
<b>Solutions, International</b>	
SmartScrap & The ClipperII V2.0, . . . . .	45.
Super Glue II v2.01, . . . . .	61.
<b>SuperMac Software</b>	
SuperSpool 5.0 or Diskfit 1.5, . . . . .	58.
SuperLaserSpool 2.0 or Sentinel 2.2, . . . . .	87.
<b>Symantec</b>	
Symantec Utilities for Mac (SUM II), . . . . .	95.
Symantec AntiVirus for Mac (S.A.M.), . . . . .	63.
<b>Synex</b>	
Mac Envelope 4.1, . . . . .	SPECIAL 85.
Mac EnvelopePlus v1.0, . . . . .	SPECIAL 179.

### HyperMedia & Languages

<b>Activision</b>	
Reports for Hypercard, . . . . .	65.
<b>Apple Computer</b>	
HyperCard, . . . . .	42.
<b>Borland</b>	
Turbo Pascal, . . . . .	68.
<b>Broderbund</b>	
Whole Earth Catalogue (CD ROM), . . . . .	89.
<b>Digitalk, Inc.</b>	
Smalltalk/vmac, . . . . .	125.
<b>Hyper Press</b>	
Script Expert, . . . . .	45.
<b>Icom Simulations</b>	
HyperTMON, . . . . .	59.
TMON, . . . . .	88.
<b>Microsoft</b>	
Quick Basic, . . . . .	65.
<b>Millennium Software</b>	
HyperX, . . . . .	65.
<b>Silicon Beach</b>	
SuperCard, . . . . .	125.
<b>Smethers Barnes</b>	
Prototyper, . . . . .	185.
<b>SoftStream</b>	
Authenticate w/ Mutate, . . . . .	85.

<b>HyperHIT v2.2</b>	123.
<b>Somak Software</b>	
ScriptEdit, . . . . .	49.
<b>Spinnaker Software</b>	
Olduvai Plus, . . . . .	109.
<b>Symantec</b>	
Think C, . . . . .	155.
Think Pascal, . . . . .	95.
Just Enough Pascal, . . . . .	47.
<b>Symmetry</b>	
HyperDA (Reg. 512K), . . . . .	49.
<b>TENpointO</b>	
FocalPoint II, . . . . .	117.
<b>the Result Software</b>	
Dialoger, . . . . .	69.

### Numbers & DataBase Management

<b>Acius</b>	
4th Dimension v2.0, . . . . .	469.
<b>Blyth Software</b>	
Omnis 5, . . . . .	SPECIAL 347.
<b>Chang Laboratories</b>	
C.A.T., . . . . .	225.
<b>Claris</b>	
FileMaker II, . . . . .	219.
MacProject II, . . . . .	369.
<b>Fox Software</b>	
FoxBASE + Multi-User v2.0, . . . . .	399.
FoxBASE + v2.0, . . . . .	295.
FoxBASE + Runtime v2.0, . . . . .	179.
<b>Informix</b>	
Wingz v1.1, . . . . .	249.
<b>MICRO PLANNING INTERNATIONAL</b>	
MICRO PLANNER 6.1, . . . . .	SPECIAL 325.
<b>Microsoft</b>	
Microsoft Works 2.0, . . . . .	185.
Microsoft Excel 2.0, . . . . .	249.
Microsoft Office, . . . . .	529.
<b>Odesta</b>	
Double Helix III, . . . . .	329.
DataDesk Professional v3.0, . . . . .	329.
GeoQuery, . . . . .	198.
<b>Paracomp</b>	
Milo, . . . . .	155.
<b>Preferred Publishers</b>	
Database, . . . . .	69.
<b>Satori Software</b>	
Bulk Mailer 3.3, . . . . .	75.
Bulk Mailer Plus, . . . . .	185.
<b>SoftStream</b>	
Endeavour Planning, . . . . .	95.
<b>Symmetry</b>	
KeyPlan, . . . . .	245.
<b>Synergy</b>	
KaleidaGraph, . . . . .	139.

# Stock, Speed, Support, Price





atOnce! is the next generation in high-speed small business accounting. Included in one seamless integrated module are four full-featured applications: General Ledger, Accounts Receivable w/Billing, Accounts Payable & Payroll.  
atOnce! by Layered . . . . . \$289.00



A full-featured 2400 baud modem with 4800 baud group three send-only fax capability. Includes a cable, a custom version of BackFax software and online starter packages.  
Promodem 2400m Fax by Prometheus \$209.00



All the power needed for even the largest databases is yours with Omnix 5. Files of up to 2560 megs are possible. This latest version includes many new features.  
Omnix 5 by Blyth Software . . . . . \$347.00

## PROGRAMS PLUS

FAX: 203/381-9043  
Inquiries: 203/378-3662  
75 RESEARCH DRIVE  
STRATFORD, CT 06497

1/800/832-3201 (USA)  
1/800/344-7753 (Canada)

**Systat**  
Systat v5.0 (Specify MacPlus, SE or Mac II). . . . . 485.  
Fastat (Specify MacPlus, SE or Mac II). . . . . 165.

### Word Processors & Desktop Publishing

**Adobe**  
ATM (Adobe Typeface Manager). . . . . 56.  
ATM + (Adobe Typeface Manager Plus Pak). . . . . 109.  
Adobe Illustrator w/ ATM. . . . . 279.  
Streamline or Newsletters. . . . . 229.  
TrueForm Fill-Out. . . . . 169.  
TrueForm Set-Up. . . . . 225.  
Adobe Type Libraries vol 1 Thru 117 (Each). . . . . CALL

**Advanced Software**  
DocuComp. . . . . 88.

**A Lasting Impression**  
ResumExpert. . . . . 38.

**Aldus Corporation**  
Color Extension. . . . . 135.  
Aldus Persuasion or Freehand. . . . . 339.  
PageMaker 3.02. . . . . 385.

**Altsys, Corp.**  
Photographer 3.0. . . . . 249.

**Antic Software**  
Flexforms Business Template 1 or 2. . . . . SPECIAL 49.

**Ashton Tate**  
FullWrite Professional or Full Impact. . . . . 249.

**Broderbund**  
DTP Advisor. . . . . 47.

**Claris**  
MacWrite II. . . . . 169.

**Computer Asoc.**  
Cricket Graph v1.31. . . . . 125.

**Data Translation**  
PhotoMac. . . . . 469.

**Design Science**  
Math Type 2.0. . . . . 95.

**Dubl-Click Software**  
World-Class Lasertype vol. 1 Thru 9 (each). . . . . 42.

**Emerald City**  
Type Align. . . . . 60.

**Farallon Computing**  
Screen Recorder. . . . . 125.  
MacRecorder v2.0. . . . . 159.

**Letraset**  
Design Studio. . . . . 619.  
Ready Set Go! 4.5. . . . . 269.  
Letra Studio or Image Studio v1.5. . . . . 269.

**Microsoft**  
Microsoft Word 4.0 or PowerPoint 2.1. . . . . 249.

**New Horizon**  
Word Maker. . . . . 65.

**Niles & Assoc.**  
EndNote. . . . . 75.

**Olduvai Software**  
Read-It! OCR 2.1. . . . . 239.

**Paragon Concepts**  
Nisus v3. . . . . 245.

**Portfolio Systems**  
DynoDex. . . . . 89.

**Power Up**  
Calendar Creator. . . . . 38.  
Address Book Plus (Book Binder). . . . . 85.  
Fast Forms. . . . . 89.

**Preferred Publishers**  
Vantage or Exposure. . . . . 52.

**Precision**  
Expressionist 2.03. . . . . 79.

**Quark, Inc.**  
QuarkXPress v2.12. . . . . 449.  
QuarkStyle. . . . . 169.

**Spinnaker Software**  
Top Honors. . . . . 59.  
Springboard Publisher II. . . . . 109.

**Symantec**  
More II. . . . . 249.

**Symmetry**  
Acta Advantage. . . . . 65.

**T / Maker Company**  
WriteNow v2.2. . . . . SPECIAL 119.

**TimeWorks**  
Publish-It. . . . . 219.

**Word Perfect Corporation**  
Word Perfect v1.03. . . . . 229.

**Working Software**  
QuickLetter. . . . . 73.

**Xerox Imaging Systems**  
AccuText. . . . . 545.

### Spelling & Grammar Checkers

**Deneba Software**  
Spelling Coach 3.1 Professional. . . . . 125.  
Big Thesaurus. . . . . 65.

**Electronic Arts**  
Thunder! II. . . . . 49.

**Lexpertise**  
Mac Proof. . . . . 115.

**Microlytics, Inc.**  
Word Finder (Synonym Finder). . . . . 34.  
Electronic Word Finder. . . . . 59.

**Reference Software**  
Grammatik. . . . . 52.

**Sensible Software**  
Sensible Grammar or BookEnds. . . . . 51.

### Disk Drives/Hard Disks/ Upgrades/Keyboards

1 Meg SIMMS . . . . . CALL

**Avatar Technologies**  
Main Frame II. . . . . 725.

**CMS**  
MacStack SD20U Mac+, SE, II). . . . . 449.  
MacStack SD30U Mac+, SE, II). . . . . 499.

**Cutting Edge**  
Cutting Edge MCK-105QK KB w/ Quickeys. . . . . 133.  
Cutting Edge 800k Drive. . . . . 149.  
20 + Meg Hard Drive. . . . . 359.  
30 + Meg Hard Drive. . . . . 469.  
45 + Meg Hard Drive. . . . . 519.

**Dayna Communications**  
Daynafile DF0100 Single. . . . . 499.  
Daynafile DF0102 Dual. . . . . 695.

**DataDesk**  
Hyper Dialer. . . . . 29.  
MAC-101 Keyboard or ADB Keyboard. . . . . 136.

**Hewlett Packard**  
CALL

**Kennect Technology**  
Rapport w/ Fastback II. . . . . 199.  
Drive 2.4. . . . . 329.

**Key Tronic**  
Mac Pro Keyboard w/ Tempoll. . . . . SPECIAL 119.

**Mass Micro Systems**  
Datapak. . . . . 1185.  
Data Cartridge (Single). . . . . 125.

### Modems

**Abaton**  
InterFax 12/48. . . . . 265.  
InterFax 24/96. . . . . 419.

**Anchor Automation**  
MacPac 2400E w/ software & cable. . . . . 169.

**Applied Engineering**  
DataLink Express. . . . . 189.

**Hayes Microcomputing**  
Smartmodem 2400M w/ smartcom II. . . . . 429.  
Smartcom II 3.1. . . . . 85.

**Practical Peripherals**  
Practical Modem 2400SA. . . . . 179.  
MacCompac (2400SA w/ Microphone & Cable). . . . . 225.

**Prodigy Service Co.**  
Prodigy Modem Kit 2400. . . . . 159.

**Prometheus**  
Promodem 2400M Ext. . . . . 199.  
Promodem 2400SE Int. . . . . 209.  
Promodem 2400MII Int. . . . . 269.  
Promodem 9600M Plus Ext. . . . . 750.  
Promodem 2400M Fax. . . . . 209.  
MacKNOWLEDGE. . . . . 139.

**Shiva**  
NetModem V2400. . . . . 395.

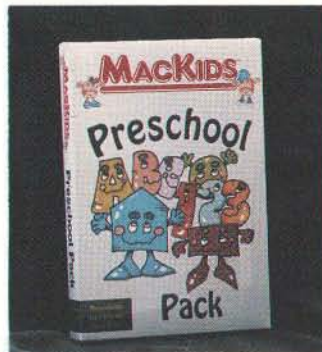
**Supra Corporation**  
Supra Modem 2400. . . . . 115.

# Your Business Plus is PROGRAMS PLUS

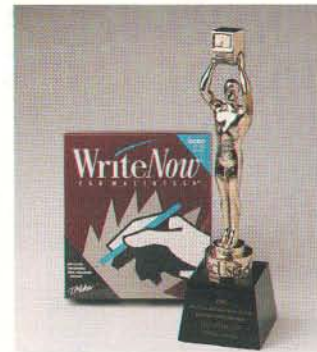




Increase your productivity with KeyTronic's new ADB-compatible 105-key MacPro keyboard. Features extended-style layout, dual-legend keycaps and free Tempo II™ Macro Software. Backed by a three-year warranty and toll-free product support. **MacPro Keyboard by KeyTronic . . . \$119.00**



Six educational lessons in color that teach your child the ABC's, shapes, counting, and more in a fun and exciting manner. Ten additional MacKids programs are available in B/W. **Preschool Pack by Nordic Software . . \$49.00**



The new version of the easy-to-use, easy-to-learn, powerful word processor. Now has a 135,000 word dictionary, compatible with other major programs, and lots more. **WriteNow 2.2 by T/Maker . . . \$119.00**

## PROGRAMS PLUS

FAX: 203/381-9043  
Inquiries: 203/378-3662  
75 RESEARCH DRIVE  
STRATFORD, CT 06497

1/800/832-3201 (USA)  
1/800/344-7753 (Canada)

### Accounting Packages

<b>Aatrix Software</b>	
Aatrix Checkwriter v2.0. . . . .	35.
<b>Chang Labs</b>	
Rags to Riches 3-Pack 3.1 (GL / AR / AP). . . . .	285.
<b>Check Mark</b>	
MultiLedger. . . . .	235.
Payroll. . . . .	175.
Cash Ledger. . . . .	115.
<b>Computer Assc.</b>	
Simply Accounting. . . . .	219.
<b>Digital Etc.</b>	
Business Sense. . . . .	SPECIAL 269.
<b>Intuit</b>	
Quicken v1.5. . . . .	36.
<b>Layered</b>	
Insight One Write. . . . .	99.
At Once!. . . . .	SPECIAL 285.
Insight Expert INV or Time Billing. . . . .	395.
Insight Expert GL, AR, AP or Payroll. . . . .	395.
<b>MECA</b>	
Managing Your Money. . . . .	124.
<b>Money Magazine (Reality Software)</b>	
Wealth Builder. . . . .	149.
<b>Monogram</b>	
Dollars & Sense 4.1c. . . . .	81.
<b>Nolo Press</b>	
WillMaker 3.0. . . . .	32.
<b>ProPlus Software</b>	
WallStreet Investor v3.0. . . . .	395.
<b>Satori Software</b>	
Componets GL. . . . .	369.
<b>SoftView</b>	
MacInTax. . . . .	65.
<b>Survivor Software</b>	
Invoiceit. . . . .	49.
MacMoney 3.0 (Enhanced Version). . . . .	59.
<b>Timeslips</b>	
Timeslips III. . . . .	169.

### Graphics & Design Software

<b>3G Graphics</b>	
Images w/ Impact Graphics & Symbols. . . . .	51.
Images w/ Impact Business 1. . . . .	65.
<b>Abracadabra</b>	
Design Your Own Home Architecture. . . . .	SPECIAL 49.
<b>Altsys Corp.</b>	
Art Importer. . . . .	89.
Metamorphosis. . . . .	149.
<b>Bright Star Technology</b>	
Hyper Animator. . . . .	98.

**Now on CompuServe-  
GO PP Genie-GOPP**

<b>InterFace. . . . .</b>	249.
<b>Broderbund</b>	
Print Shop. . . . .	35.
TypeStyler. . . . .	119.
<b>Claris</b>	
MacPaint II. . . . .	95.
Smartform Designer. . . . .	285.
MacDraw II. . . . .	295.
Claris Cad. . . . .	595.
<b>Custom Applications Inc.</b>	
Freedom of Press. . . . .	259.
<b>Deneba Software</b>	
Ultra Paint. . . . .	125.
Canvas 2.1. . . . .	189.
<b>Dubl-Click Software</b>	
World-Class Fonts vol. 1 & 2 Thru 7 & 8 (each). . . . .	42.
WetPaint vol. 1 & 2 Thru 17 & 18 (each). . . . .	42.
<b>Electronic Arts</b>	
Studio 8 (MacII). . . . .	295.
Studio 1. . . . .	96.
<b>Emerald City</b>	
Smart Art I, II or III. . . . .	84.
<b>Foundation Publishing</b>	
Comic People. . . . .	21.
Comic Strip Factory. . . . .	38.
<b>Generic Software</b>	
Generic CADD. . . . .	84.
Generic CADD Libraries (each). . . . .	CALL
<b>Graphsoft</b>	
Blueprint. . . . .	295.
Mini Cad + . . . . .	499.
<b>Innovative Data Design</b>	
MacDraft 1.2B. . . . .	169.
Dreams. . . . .	299.
<b>I.S.I.</b>	
Precision. . . . .	155.
<b>Kaetron Software</b>	
Top Down. . . . .	185.
<b>LetraSet</b>	
Font Studio. . . . .	469.
<b>MacroMind</b>	
VideoWorks II. . . . .	175.
MacroMind Director. . . . .	445.
<b>MathSoft</b>	
MathCAD. . . . .	305.
<b>Metro ImageBase</b>	
Various Fonts (each). . . . .	75.
<b>Micro: Maps</b>	
MacAtlas Paint v2.0. . . . .	45.
MacAtlas Professional (PICT / MacDraw Version). . . . .	105.
MacAtlas Presentation Pack. . . . .	105.
<b>Micro Spot</b>	
MacInteriors. . . . .	185.
MacPlot Pen Plotter Professional. . . . .	259.
MacPlot Pen Plotter Standard. . . . .	133.

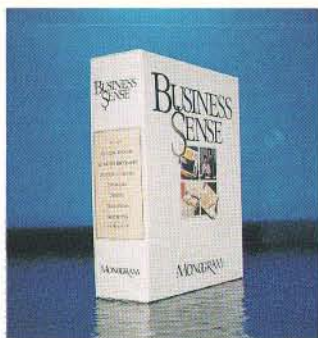
<b>Paracomp</b>	
Swivel 3D v1.1. . . . .	299.
Model Shop. . . . .	369.
<b>Select Micro Systems, Inc</b>	
MapMaker v4.0. . . . .	239.
<b>Silicon Beach</b>	
Super Paint 2.0. . . . .	125.
Super 3D 2.0. . . . .	315.
<b>Solutions International</b>	
The Curator v1.05. . . . .	72.
<b>Strata</b>	
Stratavision 3D. . . . .	375.
<b>SuperMac Software</b>	
Pixel Paint v2.0. . . . .	225.
Pixel Paint Professional. . . . .	389.
<b>Tactic Software</b>	
Art Clip or ArtFonts 1, 2 or 3. . . . .	49.
Art Clip vol 2. . . . .	65.
<b>Zedcor</b>	
DeskPaint 2.0. . . . .	64.

### Educational/Creative Software

<b>Ars Nova</b>	
Practica Musica v2.2. . . . .	72.
<b>Broderbund</b>	
Sensei Geometry, Calculus or Physics. . . . .	58.
Where in the World is Carmen SanDiego?. . . . .	27.
Where in Europe is Carmen SanDiego?. . . . .	29.
Where in the USA is Carmen SanDiego?. . . . .	29.
Jam Sessions. . . . .	29.
<b>Carina Software</b>	
Voyager v1.2. . . . .	85.
<b>Coda</b>	
Macdrums. . . . .	31.
Perceive. . . . .	49.
Finale. . . . .	469.
<b>Electronic Arts</b>	
Mavis Beacon Typing. . . . .	32.
Deluxe Music Construction Set V2.5. . . . .	84.
Deluxe Recorder. . . . .	95.
<b>Hip Software Corp.</b>	
Harmony Grid. . . . .	59.
Hook Up. . . . .	89.
<b>Learning Company</b>	
Reader Rabbit. . . . .	31.
Math Rabbit. . . . .	31.
<b>Meta Comet</b>	
Accu-Weather Forecasters. . . . .	57.
<b>Nordic</b>	
Educational Series: (each). . . . .	28.
PreSchool Pack. . . . .	SPECIAL 35.
<b>Polican Software</b>	
Monsters & Make Believe. . . . .	24.
Dinosaur Days. . . . .	24.

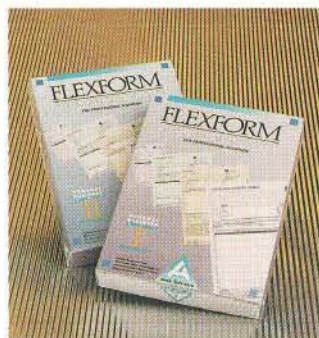
# Stock, Speed, Support, Price





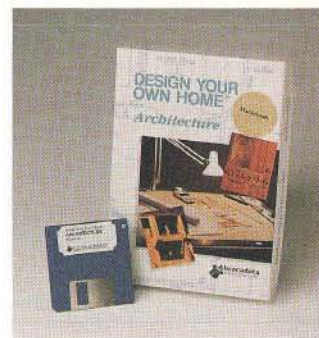
Business Sense Ver. 1.3 is an easy-to-use complete accounting system for the small to medium business. Comes with the interactive tutorial "Teach Yourself Essentials of Accounting" by Addison-Wesley Publishing.

Business Sense by Digital Etc. .... \$269.00



Two separate collections of popular business forms. Print camera ready forms, include auto date fields, import data and print multiple part forms with SmartForm Assistant (included).

Flexforms Business Templates 1 or 2 by Antic Software ..... \$49.00 each



DESIGN YOUR OWN HOME, ARCHITECTURE, lets you create floorplans, elevations and structural details using architectural standards. Automatically calculates distances, angles, and areas; prints out to scale and allows for custom shapes.

D.Y.O.H. Architecture by Abracadata \$49.00

## PROGRAMS PLUS

FAX: 203/381-9043  
Inquiries: 203/378-3662  
75 RESEARCH DRIVE  
STRATFORD, CT 06497

1/800/832-3201 (USA)  
1/800/344-7753 (Canada)

### Penton Overseas

VocabuLearn/ce Spanish, French, German or Italian (Level 1 or 2). .... 30.  
VocabuLearn/ce Japanese (Level 1 or 2). .... 36.

### Blank Media & Ribbons

Bulk (Sony) 3 1/2" DS/DD (10). .... 14.  
Sony 3 1/2" DS/DD Disks (box of 10). .... 14.  
Sony 3 1/2" DS/HD (10). .... 25.  
Verbatim 3 1/2" DS/HD (10). .... 29.

### Ribbons

ImageWriter Ribbon. .... 4.  
ImageWriter Rainbow Pack (6 Colors). .... 20.  
ImageWriter II-Four Color Ribbon. .... 9.

### Printers, Digitizers & Monitors

**Apps**  
Micro TV (MacII). .... 275.  
**Complete PC**  
Complete Half Page Scanner. .... 309.  
Complete Full Page Scanner. .... 749.  
**Cutting Edge**  
Two-page Display Monochrome Monitor. .... 935.  
**Digital Vision**  
Computer Eyes-Mac. .... 195.  
Computer Eyes-MacII Color. .... 349.  
**GDT Software**  
Print-Link Collection. .... 59.  
JetLink Express. .... 89.  
**Koala Technologies Corp.**  
MacVision 2.0 (Digitizer). .... 219.  
**Kurta**  
IS ADB Tablet 8 1/2 x 11. .... 245.  
IS ADB Tablet 12 x 12. .... 359.  
**LogiTech**  
ScanMan. .... 319.  
**Magnavox**  
Color Monitor 14". .... 535.  
**Microtek Lab, Inc.**  
Mac Interface Kit. .... 369.  
MSF-300Z Color/Gray Scale. .... 1625.  
**Seikosha**  
SP1000 (Imagewriter Compatible). .... 229.  
**ThunderWare**  
LightningScan. .... 369.  
ThunderScan. .... 185.

### Accessories

**Advanced Gravis**  
Mouse Stick (Plus or ADB). .... 85.  
**American Power Conversion**  
110SE UPS. .... 269.  
**CalComp**  
Wiz. .... 149.

**Ergotron**  
MacTilt (Mac, SE, or II). .... 68.  
Muzzle SE. .... 62.  
Muzzle MacII. .... 68.  
**I/O Design**  
Mac Plus Carrying Case. .... 59.  
MacSE Carrying Case. .... 75.  
**Kalmar Designs**  
Micro Cabinet (holds 45 disks). .... 14.  
Double Micro Cabinet (holds 90 disks). .... 21.  
Triple Micro Cabinet (holds 135 disks). .... 31.  
**Kensington**  
Apple Security Kit. .... 34.  
Antiglare Polarizing Filter. .... 33.  
Mac II Stand and Cable Kit. .... 64.  
Printer Muffler 80. .... 43.  
System Saver Mac (Beige or Platinum). .... 63.  
Super Base. .... 34.  
Masterpiece Mac II. .... 105.  
New Turbo Mouse (Reg. or ADB). .... 109.  
Apple Color Monitor or Full Page Display  
Polarizing Filter. .... 63.  
Two Page Display Polarizing Filter. .... 135.  
**Mobius**  
Fanny Mac QT. .... 59.  
**Mouse Systems**  
A+ Mouse (MacPlus). .... 59.  
A+ ADB Mouse (Mac SE/ Mac II). .... 79.  
**Practical Solutions**  
Mouse Master. .... 35.  
Cordless Mouse. .... 99.

### Networking Software & Hardware

**Beagle Bros.**  
Flash. .... 119.  
**Compuserve**  
Compuserve Starter Kit. .... 24.  
Compuserve Navigator v2.1. .... 39.  
**DataViz**  
MacLink Plus/Translator. .... 99.  
MacLink Plus with Cable. .... 119.  
**Farrallon**  
PhoneNET Din 8 or DB9. .... 33.  
Timbuktu. .... 95.  
TrafficWatch or Timbuktu Remote. .... 125.  
Portable Pack. .... 339.  
**Freemsoft**  
White Knight v.11.04. .... SPECIAL 85.  
**Infosphere**  
Liaison. .... 169.  
**Insigna**  
SoftPC v1.3. .... 245.

**Microcom Software**  
Carbon Copy (Twin Pack). .... 179.  
**Microsoft**  
Microsoft Mail Mac Work Station. .... 84.  
Microsoft Mail Mac Server. .... 249.  
**Nuvotech**  
TurboBridge. .... 319.  
NuvoLink SC. .... 329.  
Turbo Star. .... 1359.  
NuvoLink II. .... CALL  
**Prodigy Service Co.**  
Prodigy Start-up Kit. .... 27.  
**Shiva**  
Net Serial X232. .... 269.  
Net Bridge or TeleBridge. .... 329.  
**Solutions, International**  
BackFax v1.02. .... 124.  
Fox Gate Plus. .... 229.  
**Synergy Software**  
VersaTerm. .... 88.  
VersaTerm-Pro. .... 174.  
**Traveling Software**  
LAP-LINK Mac Connectivity Pac. .... 119.  
LAP-LINK Network Pac v3.0. .... 189.  
**TOPS**  
Tops Repeater. .... 122.  
Tops FlashCard. .... 155.  
Tops Network Bundle v3.0. .... 189.  
InBox/Mac Administrator 20 user. .... 215.

### OUR POLICY

- VISA and MASTERCARD accepted. No surcharge. Your credit card is not charged until we ship.
- If we ship a partial order, shipment that completes is sent free.
- All shipments insured; no additional charge.
- Upon receipt and approval, personal and company checks now clear the same day for immediate shipment.
- No sales tax except orders shipped within CT, add 8% tax.
- COD maximum \$1000, cash or certified check. COD orders ship via UPS Blue Label unless UPS Ground delivers next day.
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. Prices subject to change without notice. All items subject to availability.
- For purchase orders, corporate purchases, call our business office at 203-378-1926, 9am-5:30pm EST. Purchase orders accepted at our discretion. Shipping on corporate orders billed at cost.

### SHIPPING

- Continental U.S.: Add \$3.00 per order to cover Federal Express Standard Overnight Service, unless UPS ground delivers next day. Some areas require an additional day.
- All (in-stock items) ordered by 7:00pm Eastern Time Monday thru Friday will ship that evening for overnight delivery, barring computer failures or other catastrophes.
- Alaska, Hawaii, outside Continental U.S., APO and FPO: call (203) 378-3662 or write for shipping information.
- Mail-in orders (especially from foreign countries), please furnish telephone or fax number.

# Your Business Plus is PROGRAMS PLUS

Circle 44 on reader service card





# REVIEWS



## PostScript Laser Printer

### QMS-PS 820 TURBO

**Pros:** Fast; versatile paper-handling; accepts memory expansions and SCSI hard disk. **Cons:** 8-ppm engine creates a bottleneck with typographically simple documents. **Company:** QMS. **Requires:** Mac Plus. **List price:** \$6995. Additional paper trays \$75 each.



The QMS-PS 820 turbo costs \$4 less than Apple's top-of-the-line LaserWriter IINTX, plus it does more and does it faster. The PS 820 turbo combines excellent performance with versatile paper-handling features. The result is one hot PostScript laser printer—and a strong challenger to the NTX.

The PS 820 turbo uses Canon's LBP-TX print engine, which is similar to the popular LBP-SX engines used in Apple's LaserWriter II models and in the QMS-PS 810. Both engines produce 300-dots-per-inch output, both have a maximum print speed of 8 pages per minute (ppm), and both are easy to set up: simply remove the packing material and slide a mess-free disposable toner cartridge (good for about 4000 pages) into place.

But instead of just one 200-sheet paper tray, the TX has two. You can put letterhead in one tray and second sheets in the other. Or, one tray can hold letter-size paper and the other legal-size stock, or envelopes. Or you can put the same paper in both trays and set up the printer to switch trays when the first one empties. A front-panel status display shows which tray is active. (The PS 820 turbo comes with two letter-size trays.)

The PS 820 turbo provides three connection ports: LocalTalk, RS-232C serial, and Centronics parallel. Apple's



QMS-PS 820 turbo

PostScript printers don't have the Centronics port, which is generally used to connect to IBM PCs. The rear-panel thumb switch makes choosing the active port a breeze; Apple uses small, unlabeled DIP switches.

#### It's Smart, Too

The driving force behind the PS 820 turbo's TX engine is a high-performance Adobe Discovery controller containing a 68020 processor running at 20MHz. The LaserWriter IINTX and Dataproducts' slick LZR-1260 both contain a 68020, but they run at a slower 16MHz (see "Paging All Printers," *Macworld*, October 1989). The PS 820 turbo's faster processor enables it to outpace its competitors when printing complex illustrations or documents containing numerous fonts and type sizes (see "Testing the Turbo").

When printing typographically simple documents, however, such as double-spaced manuscripts formatted

in Courier, the PS 820 turbo falls victim to its engine's 8-ppm maximum printing speed. With simple documents, the PS 820 turbo finished behind even the NEC SilentWriter LC890, which uses a laggardly 10MHz 68000 controller but has a 10-ppm engine.

The PS 820 turbo's 2MB of memory is expandable to 8MB—enough to hold hundreds of downloadable fonts. (QMS charges \$595 for a 1MB expansion kit, \$995 for 2MB, and \$1495 for 4MB.) Like other upper-class PostScript printers, the PS 820 turbo has a SCSI port that accepts a hard disk for storing fonts and boosting performance. As for built-in fonts, the printer includes 39—the standard 35 typefaces built into LaserWriters and most other PostScript printers, plus the Helvetica Condensed family.

Like other PostScript printers, the PS 820 turbo offers emulation modes that let the printer act like something it isn't. Both the LaserWriter IINTX and

MARK JOHANN



Dataproducts' LZR-1260 can emulate a Diablo 630 daisy wheel printer or a Hewlett-Packard LaserJet Plus. The PS 820 turbo can imitate a LaserJet Plus, but it trades the Diablo 630 emulation mode for a more useful one: Hewlett-Packard Graphics Language (HPGL), a set of printing rules popular in the world of pen plotters and computer-aided design (CAD).

#### Little Things that Count

Price and performance are reason enough to buy the PS 820 turbo. Happily, there's more—an excellent support package of documentation and utilities for the Mac and the IBM PC. The documentation contains a useful tutorial on typographic basics as well as detailed information on the Turbo's version of PostScript.

The utilities include a program that lets you align the printer to center images on each page, and a desk accessory that lets you switch between the first and second paper trays or specify that the printer automatically switch to the second when the first is empty. Also included are Adobe Printer Description and PostScript Printer Description files. Applications such as Aldus's PageMaker and FreeHand and

Adobe's Illustrator 88 use these files to learn about a printer's specific features. For example, when a PageMaker user chooses the PS 820 turbo in the Print dialog box, additional buttons appear for choosing between the upper and lower paper trays.

Is the PS 820 turbo the best high-performance PostScript printer for under \$10,000? It depends. If you print hundreds of pages a day, you might be better served by Dataproducts' industrial-strength LZR-1260. It's a tad slower than the PS 820 turbo and costs \$1000 more, but its heavy-duty, 12-ppm Toshiba print engine is rated for 25,000 pages per month. The PS 820 turbo's Canon TX engine is rated for only 5000 pages per month.

But the PS 820 turbo definitely beats the LaserWriter IINTX—it is faster, easier to use, and has better paper-handling and emulation features. If you are thinking of buying a LaserWriter IINTX, get a PS 820 turbo instead. And if you don't need two paper trays, consider the QMS-PS 810 turbo for \$5995. It contains the same fast controller as the PS 820 turbo, but uses the single-tray Canon CX engine. —**Jim Heid**

See Where to Buy or circle 823 on reader service card.

#### Online Information Service

### AMERICA ONLINE

**Pros:** Outstanding interface; simple to navigate; upbeat, helpful atmosphere; well-implemented services. **Cons:** Addictive; some forums not fully developed.

**Company:** Quantum Information Services. **Requires:** Mac Plus, modem.

**List price:** \$5.95 per month (includes one-hour connect time; additional time billed at \$5 to \$10 per hour).

America Online is a happy place. And, more than any other online service it is indeed a place; there are "rooms" to explore—each with its own atmosphere—and people to meet. An evolution of AppleLink Personal Edition, America Online is run by Quantum Computer Services (not the hard drive company).

#### Smiling Interface

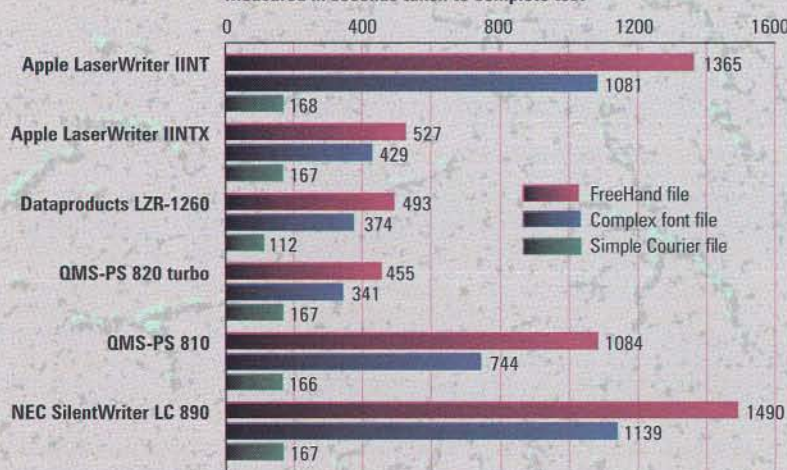
The America Online software itself guides you through the registration process. When your modem reaches the service, a cheery (digitized) voice bids you "Welcome." (This same voice later tells you, "You have mail" and, after downloading a file, says "File done.") Once you begin to use the service, you'll notice that you're in a true Macintosh environment. The commands are in menus, you can save anything on the screen in its own text file, each department is in its own window, and files are neatly organized in folders. In fact, America Online is truer to the letter and spirit of the Macintosh interface than any other online service.

Within the first ten minutes, you'll notice something else unusual: you're not interacting with some remote computer; you're actually encountering people. In the interactive areas of America Online, you see a transcript of all the remarks being written by the members currently online. Anything you type appears on the screen of anyone else in the room and vice versa, like a computerized conference call (see "Talk Is Cheap").

Real-time conferencing has been available for years—although much more expensively—on CompuServe. (continues)

## TESTING THE TURBO

Measured in seconds taken to complete test

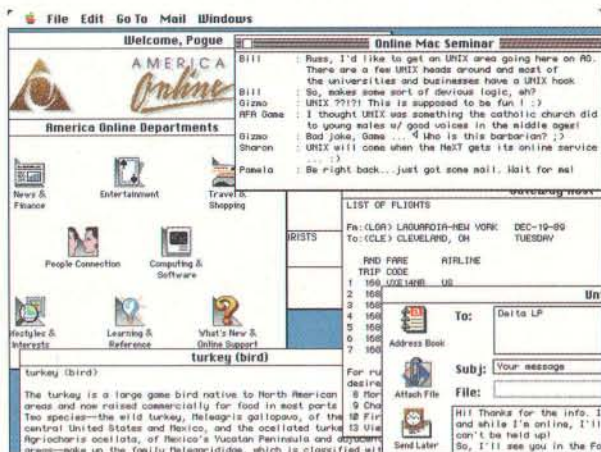


With complex documents, the QMS-PS 820 turbo is faster than the LaserWriter IINTX and Dataproducts LZR-1260. With simple documents, however, the turbo's 8-pages-per-minute engine is a performance bottleneck. Tests were performed on a 2MB Mac II with MultiFinder and background printing disabled, using version 5.2 of the LaserWriter driver.



## Talk Is Cheap

America Online lets you work in many places at once. Here are (clockwise from top left) the opening screen; a real-time seminar; a flight reservation being made; E-mail in progress; an online encyclopedia entry; and the Departments screen, for accessing services.



But America Online takes the principle much further; real-time interaction is the foundation of its instructional, social, and Macintosh-support aspects. For example, if you get lost and need help, you don't have to leave an electronic message in some technician's mailbox. You simply enter one of the interactive rooms and find a guide—a live person, whose screen name and geographical location you know, who joins the conversation, greets you by name when you sign on, and helps you immediately with your questions.

There's no end to the fun you can have in real time. You begin to recognize people from previous visits; friendships actually develop; and, in this faceless medium, you begin to learn things about the way people communicate that aren't always apparent in real life. Many of America Online's real-time events are more structured than those on other services (for example, there are game shows, well-run computer seminars, and even online homework help for students), but simply participating in a conversation among, say, 20 people all over the country is an affecting learning process in itself.

## At Your Service

There's more to America Online than its conferencing, of course. As on other online services, you can research and make plane reservations (but America Online lets you do so at no extra cost). The clean, folder-based interface for the bulletin board areas is a breath of fresh air compared with the mystifying systems used by other online services. A 32,000-entry encyclopedia produces search results in four seconds.

And a top-notch E-mail system makes messaging easy; you can compose the mail offline, send files, forward copies of incoming mail to other people, send carbon copies, and so on.

There's a fairly respectable Macintosh software library for downloading (at this writing, about 6000 files). It's only a fraction of the size of the more established libraries, like the one on CompuServe, but it grows daily. There's also an online shopping service run by CompuStore Online. The store's discounted prices are guaranteed to be lower than street prices (and because it's a form of mail order, you usually don't have to pay sales tax).

There is a heavy philosophical emphasis on learning and on social interaction. For example, real-time instructional classes are offered on a number of topics (programming, music theory, and so on). When you have a question, you type a question mark, and the instructor calls on you by name. There's a special forum for discussion of AIDS-related issues. And there's even a romance section, where an online matchmaker supervises the personal ads.

Finally, all of the usual online-service perks are available: stock quotes (updated every 15 minutes), weather reports, news bulletins, and so on. While the content is similar to that offered on other services, the form—scrolling, copyable text in a Macintosh window—is infinitely more palatable.

If at any point in your explorations you need help, you can enter a special help forum; you're not billed for the time you spend in this area. That's consistent with the rest of the service's helpful, upbeat atmosphere.

## Online on the Line

Because it's a fledgling operation, there are still a few problems with America Online. For example, there's not yet very *much* of anything—the system could be improved with more services, more forums, and a larger membership. You can't do banking with the service, and you can't order groceries. You might even complain that the service occasionally carries the Macintosh interface too far; for example, to read a joke in the humor section, you have to plow through six nested folders. And sometimes in the evening, glitches in the phone-switching system cut you off in midsentence.

But as long as you understand America Online's emphasis on telecommunications, you won't be disappointed. The heart of America Online is "live" interaction between people—instructors, system administrators, and other Macintosh and Apple II users. And America Online's exemplary interface is so friendly that it's easy to forgive the fact that its services and membership are still expanding. It's not the right service for business users, doctoral thesis researchers, or grouches. But it's great for anyone else who gets a kick out of the Macintosh. America Online, you might say, is the service for the rest of us.—David Pogue

See Where to Buy or circle 702 on reader service card.

## ★ Online Information Service

### PRODIGY 1.0

**Pros:** Attractive pricing; wide variety of useful services; easy to navigate.

**Cons:** Extremely slow; horrendous IBM-style interface; no way to capture information; no downloadable software. **Company:** Prodigy Services Company. **Requires:** Mac Plus, modem. **List price:** \$49.95; service \$9.95 per month.



Prodigy was originally an online information service for IBM computers. A joint effort by IBM and Sears, it offered an innovative navigational scheme, colorful graphics, and some dramatic steps into the future of home computing. With only a modem and the Prodigy software (continues)





Mitch Kapor, chairman, ON Technology.

# "Before you can ask, 'Where's my file?' you'll be reading it."

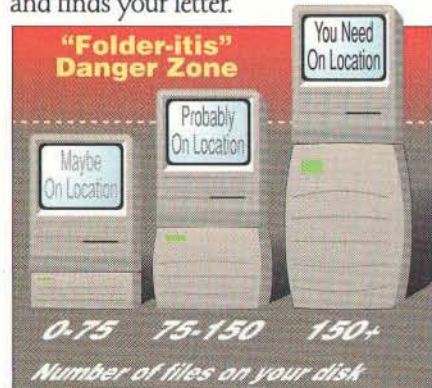
"It happens all the time:

You sit down, ready to work. Then, because you have hundreds of files on your hard disk, you waste time looking for the file you want. If you find it, you have to run a word processor to see what's inside.

That's crazy. And that's exactly why we created the On Location™ desk accessory: to make finding and viewing files as fast and simple as possible.

## The fastest way to find and view files

You don't have to remember file names to use On Location. Just type in a word or two from the file you're looking for. So if you need the letter you wrote to John Simmons about the insurance policy, type 'Simmons' and 'insurance.' Within seconds, On Location scans its index of all the text on your hard disk and finds your letter.



And you don't have to open your word processor to read the file. Double-click on the file name, and you'll instantly see the text, including the original fonts and styles for word-processing documents. You can also copy text to the clipboard. Or launch the file directly into its application program.

If you do remember a file name (or part of one), you can type that in the search window. On Location starts looking as you type, and often finds the file before you finish.

## The story behind the speed

On Location is so fast because it stores an extremely compact index of your hard disk. (This index usually takes up less than two percent of the disk.) As you save and move files, On Location automatically makes note of the changes. Then, when your Mac is idle, On Location indexes the name and text of these files.

We call that steady, silent process 'background indexing,' and On Location is the only Mac product to provide it. Background indexing means that On Location is always up-to-date and ready to work when you are.

It took us months to fine-tune On Location. But it's only going to take you a few minutes to appreciate On Location's power—and to learn how to use it.

## On Location offers unmatched speed and convenience

- find a file by typing its name or words it contains
- search an entire hard disk in seconds
- view and copy text from files, without opening applications
- see actual fonts and styles for leading word processors, including MacWrite II, Microsoft® Word, WriteNow,™ and WordPerfect®
- directly open files and application programs
- move, copy, rename, and delete files
- find text in most files, including HyperCard®, PageMaker®, and Microsoft® Excel
- search for all forms of a word ("fuzzy matching")

Requires Macintosh® Plus or above, with a hard disk and System 6.0 or above.

## One-year guarantee

We're proud of On Location. All products should work this way. And all products should come with this guarantee: if you're unhappy with On Location for any reason during the first year you own it, you may return it for a full refund.

Try On Location. You have nothing to lose—and a lot to find."

**ON**  
Technology

One Cambridge Center  
Cambridge, Massachusetts 02142  
(617) 225-2545



ware, you could do your banking, book airline reservations, and even order groceries.

The service has now been adapted—in a manner of speaking—for the Macintosh. Prodigy's introductory offers are generous and its pricing scheme is favorable to frequent users. Instead of paying a steep hourly rate (as for CompuServe), you're billed a flat \$9.95 per month, no matter how much you use the system.

### Where's the Mac?

Unfortunately, the makers of Prodigy haven't gone nearly far enough in adapting Prodigy to the Macintosh, either technically or philosophically. There are no windows, no menus, no Macintosh fonts. Instead, your screen is painted, top to bottom, with gawky-looking IBM lettering (see "Prodigy's Face"). There is some attractive use of color for Mac II users, but the scheme otherwise offers nothing but penalties. That is, because Prodigy sends an entire screenful of graphics information at a time (and not textual information, like most online services), you have to wait until the service has transmitted the entire screenful before a new screen can appear. Even on a Mac IIci with the color turned off, the wait for each new screen is intolerable—between 6 and 15 seconds per screen at 2400 baud. More than anything else, Prodigy is slow.

The all-graphics scheme is also much more sensitive to transmission errors than text-based systems are. The slightest bit of phone-line static is likely to require the time-consuming retransmission of the entire picture or, at worst, will cause you to be unceremoniously logged off the system, leaving you no choice but to log on again and hope the phone lines are kinder.

Prodigy doesn't support MultiFinder or desk accessories, either. That's a serious problem if you encounter something on the service that you want to retain; there's simply no way to capture text from Prodigy onto your disk. You can capture a bitmapped image using the  $\text{⌘}$ -Shift-3 function key, which gives you a MacPaint file you can open later, or you can send a particular screen's text to your printer. But the former solution is inconvenient, and the latter results in a waste

of paper and printer time. Because Prodigy uses a crude 24-point typeface, only a few lines fit on a screen, so no printout ever contains more than a paragraph or so. This inability to conveniently capture information is unforgivable. It immediately robs the service of much of its usefulness.

### Ad Out

One other little detail of Prodigy's interface may annoy you: teasers for advertisements appear on the bottom fifth of the screen at all times. They run from the typical ("Enter the Air France sweepstakes") to the unappealing ("Imodium A-D can stop diarrhea with just one dose!"). Should these teasers prove enticing, you can choose to see the entire ad.

As if the teasers weren't offensive enough, Prodigy's computers monitor the time you spend looking at the ads whenever the teasers pull you in. And all of the data regarding your reaction to the ads, as well as your demographic characteristics, is then passed on to the advertisers. The whole system is a little disconcerting.

### Jumping for Joy

If you can overlook all of these drawbacks, the service itself is very good. You never feel bewildered, as you often do using CompuServe. Each Prodigy service has been assigned a keyword. Type one of these *jump words* and press Enter, and you move directly to that service. MHT Bank is Manufacturers Hanover electronic banking, Siskel takes you to Gene Siskel's latest movie review, Browns shows you the

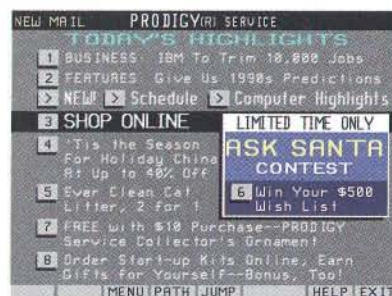
latest Cleveland Browns football scores, and so on. To make navigation even easier, the jump word **Index** always takes you to an alphabetical list of Prodigy's hundreds of services. You can move immediately to any service by double-clicking on its name, so exploring is easy and inviting.

### At Your Service

The services themselves vary widely in quality and usefulness. The extra-cost banking is practical—the bank will write and mail checks for you. The news, weather, stock quotes, and sports scores are all up-to-date and easy to find. There are complete reprints of *Consumer Reports* articles and tests. Eaasy SABRE, the airline flights-and-reservations system (run by American Airlines) is a bit confusing, but on Prodigy it is free (the equivalent program on CompuServe carries a steep hourly fee).

Prodigy also has bulletin boards about Macintosh hardware and software, but the problem is that only a few lines of gigantic text appear on a screen. You have to click the Next button to see the rest of the message. When compounded by the system's devastating slowness, you can see how clumsy the process is. The same problem plagues the electronic-mail system. And not only is there no real-time conferencing on Prodigy, but every message you post on a bulletin board is screened for content by Prodigy's "editors"; therefore, no message appears online until the day after you send it. For example, you're not permitted to post any message that smacks of "commercial, classified, or personal" advertising. I volunteered to help a bulletin-board member with a Mac problem and sent him my phone number. But the exchange of phone numbers or addresses is prohibited, so my message was returned to me with the explanation that it "failed to meet the [Prodigy] guidelines."

Incidentally, if you decide to try ordering groceries online, don't order produce. In fact, don't order anything you'd normally want to select yourself. My grapefruit was moldy, the cucumber looked more like a pickle, and the lettuce seemed to have been sat upon (not Prodigy's fault, of course). (continues)



### Prodigy's Face

Prodigy's opening screen is typical of its interface: large, crude typefaces; no menus; and a number of buttons that you double-click. This opening screen doesn't show the usual advertising stripe at the bottom—but you get the idea, since most of the options are commercial in nature.



I N T E G R A T I O N I N M O T I O N



## iDS PRO Series

Integrated Data Storage Systems presents the iDS PRO Series™ 20-200 megabyte portable hard drives. The iDS PRO Series features high performance Quantum, Seagate, Conner, and Maxtor mechanisms with average access time ranging from 12-35 milliseconds. It comes in a transportable package of 2x5x8 inches, and weighs less than 3 pounds.

This is the ultimate in portable, modular, unit expandable storage subsystems.

To find an iDS Systems' Authorized Dealer Near You, CALL 1-800-733-0078.



iDS SYSTEMS, INC.  
INTEGRATED DATA STORAGE SYSTEMS, INC.

Circle 192 on reader service card  
2, 3 & 5 Year Warranties!

Koll Bayshore Bldg. 2107 N. First Street  
Suite 280 San Jose, CA95131



**Prodigal Someday**

The prodigious failings of Prodigy's interface are doubly disappointing because the quantity and variety of the services themselves are impressive. But Prodigy's idea that it can win over the Macintosh world simply by porting its problem-plagued interface is a misconception. Without fonts, menus, DAs, windows, MultiFinder, or a good way to capture text to disk, Prodigy's software can hardly be called a Macintosh application. And until its speed and interface problems are overcome, Prodigy can hardly be called a Macintosh service. —David Pogue

See Where to Buy for contact information.

★  
**Electronic Forms Management****TRUEFORM 2.0**

**Pros:** Easy-to-understand manual; fast operation; enhanced Fill-Out module.

**Cons:** Lacks drawing tools; print-alignment dialog box not interactive.

**Company:** Adobe Systems. **Requires:** Mac Plus; additional memory, hard disk, and scanner highly recommended.

**List price:** TrueForm Set-Up with one copy of TrueForm Fill-Out \$395; four additional copies of Fill-Out \$295.



TrueForm's original publisher, Spectrum Digital Systems, was acquired by Adobe in October 1988; and version 2.0's cleaner interface, relative lack of bugs, and first-class manual definitely show the Adobe stamp.

**Formalities**

Any forms-design package must consider how its users will divide up creating forms and filling them out, and whether to emphasize data management or graphic design. A program like TrueForm, designed primarily for turning scanned copies of old paper forms into electronic forms, also runs up against TIFF files' slow print times, laser printers that can print only 8-by-10½-inch documents in a world full of 8½-by-10½-inch paper forms, and multipart forms with different data on each layer.

There are no easy answers to these problems, but TrueForm has a way around some of them. Its *forms-*

*caching* (which stores a form's image in the laser printer's memory and redraws only the fields' contents for each copy) greatly increases printing speed after the first copy. TrueForm can print just the data without the form image if you hand-feed preprinted forms to an impact printer such as an ImageWriter, but until we have 25- or 50-bin paper feeders that can feed a wide range of sizes and thicknesses into an impact printer, that's not a very workable solution. Finally, by printing each part separately, TrueForm can print differing information—say, for customer, shipping, and accounting—on different parts of a multipart form, but labels for the empty fields will show on all parts.

**A Formal Application**

TrueForm is actually two applications: one for setting up forms, and one for filling them out. To use TrueForm Set-Up you import either a scanned form or a PICT file—TrueForm has no drawing tools at all. When you click on a line or box in the imported form, TrueForm locates the edges of the object and places a data entry field over it. You can format fields for text, numbers, dates, and check boxes; and you can assign them spreadsheetlike formulas to perform operations such as calculating totals on an invoice, adding 30 days to a date, or evaluating a text string to pick out Texas addresses and then add sales tax. When you have finished setting up a form, you can open it in Fill-Out, tab through the fields, enter data, and print completed forms or save them in Stacks (no relation to HyperCard).

**Reformed**

Version 2.0 has some new features and a lot of improvements. The old manual's tutorial has disappeared for some reason, but the new manual explains TrueForm more clearly, in particular

how to use the functions (including eight new ones) to build constraints and perform calculations. Overall operation is faster and smoother. On a Mac II, TrueForm Set-Up 1.0 took about 5 minutes to import a scanned TIFF file; version 2.0 running on a Mac Plus imported the same file in only 1½ minutes. Impressive.

If you're scanning a multipage form directly into TrueForm, the new version lets you rescan a single crooked page without starting over. Set-Up also now includes a command for aligning fields; fields that present a scrolling list of choices (similar to FileMaker's); a wider tab-order dialog, which lets you see long field names; and password protection.

The merge-sequence controls for importing and exporting data were impressive in version 1.0, but in 2.0 they have become almost surreal. You can create and save multiple merge sequences, and by delimiting individual fields or groups of fields with different characters, you can import to or export from different parts of a form, and to or from different destinations and sources. You can now append exported text to an existing file. You can also apply constraint-checking to data as it is imported, and skip the headers in an imported file.

You can set up numbers with incredibly detailed formatting so that, for example, TrueForm displays parentheses around negative numbers, places a dollar sign before an amount, and rounds the pennies to two decimal places. Date and number formats are also user definable, as in Excel. Finally, for 4th Dimension users, a special 4D module that comes with TrueForm will add a new menu to your 4D applications to export data from 4D into TrueForm for printing.

**Deformed**

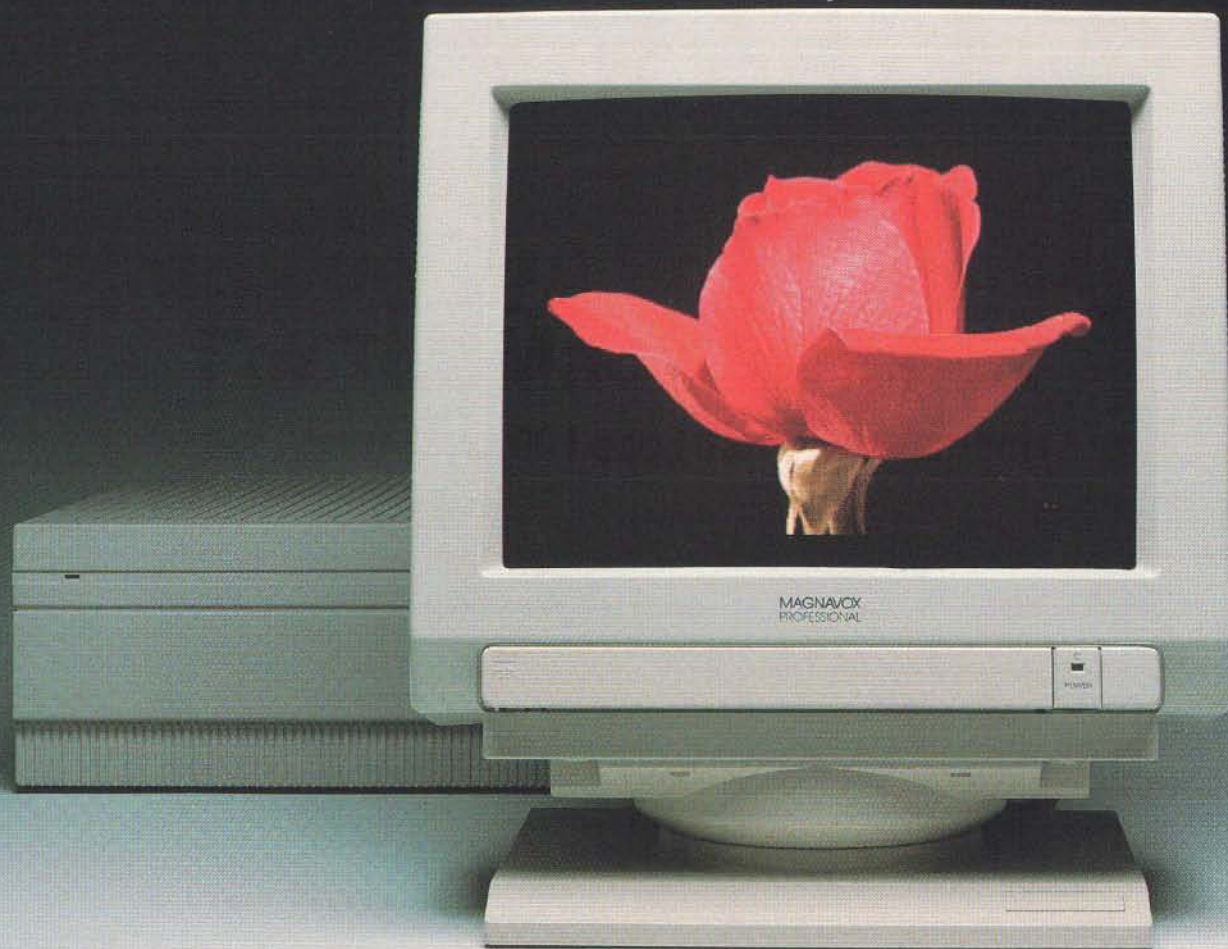
Set-Up still can't zoom in on small areas like check boxes, nor can it juggle rectangular fields placed over irregularly shaped areas (such as individual facets of teeth in TrueForm's sample dentist's chart). Zooming in on a scan, which is stored at 300 dots per inch but displayed at the Mac monitor's 72 dpi, is always a problem, but Adobe Illustrator manages it elegantly. Even *(continues)*

**Search Menu**

TrueForm Fill-Out's Select dialog box provides the power to root out forms buried deep in a Stack.



# Introducing A Better Display For The Macintosh II<sup>®</sup> ... For About \$300.00 Less Than You'd Expect.



This is not just another display clone. It's the new Magnavox Analog Color (MAC) display, specifically designed and engineered to compliment the Macintosh II system.

When we decided to develop a display exclusively for the Macintosh II, we started with two objectives: Make it work better, and make it cost less.

Our 14" MAC display appeals to even the most discriminating user. It's equipped with our new proprietary 0.29mm dot pitch

CRT for superb resolution, and a glossy CRT face for crystal clear images. Graphics and text on the MAC display shine at their best. The integrated tilt-base provides the ultimate in user comfort.

Additionally we offer a solid, two-year warranty instead of the usual 90 days. And the \$699 retail makes this a great value.

Designing a superior display for the Macintosh II system was smart. Offering it for \$300 less, that's very smart.

**MAGNAVOX**  
Smart. Very smart.

Apple Macintosh II<sup>®</sup> is a registered trademark of Apple Computer, Inc.

©1988 Philips Consumer Electronics Company  
Division of North American Philips Corporation



more useful than zooming would be different field shapes (circles would be especially useful) or the autotrace capability found in Adobe Streamline. TrueForm still lacks even rudimentary drawing tools—the one I miss most is an eraser or white box for covering up junk (scanner detritus, for example). The modal printing-alignment dialog box makes a critical function a tedious grind: you can scale the form and its contents independently and offset them horizontally and vertically, but effecting a change on the form requires closing the dialog box each time you nudge the image. I'd prefer a dialog box like Microsoft Word's Styles, where you can apply a change and see the results immediately. It would also be useful if the same hooks that export data from 4D could drop TrueForm data back into 4D. Finally, TrueForm's password protection is all or nothing—you can't give different people access to or control over different parts of a form.

#### Fill-Out Changes

Interestingly, TrueForm's new version gives much greater control to the person filling out the forms, adding the capability to define default entries, modify merge sequences, and change text formatting. TrueForm has been enhanced with sophisticated search and select capabilities, a label set-up option in the Print dialog box, and—for those overnight print jobs—an option to collate multipage forms. One nice touch I'd like to see Adobe add (with Adobe Type Manager it should be easy) is the ability to rotate the horizontal QuickForm fields (TrueForm's version of comments scrawled on a paper form) so they would be more visible.

#### The Future of Forms

So far, no forms program can entirely replace paper and pencil. On the other hand, the appeal of not having to do double work—first on a paper form, then at a keyboard entering the data into an accounting program—will continue to push electronic forms until the reality catches up with the concept. In the meantime, TrueForm is a practical and even attractive interim solution. —**Dan Littman**

See Where to Buy or circle 848 on reader service card.

#### ★ Midsize Hard Disks

### DATAFRAME XP100

**Pros:** Excellent backup, utility, and print spooler software included.

**Cons:** Upright configuration takes up desk space. **Company:** SuperMac Technology. **Requires:** Mac Plus. **List price:** \$1599.

### DIRECTDRIVE 130

**Pros:** Includes SUM II disk-recovery and utility software, two AC power outlets. **Cons:** Inadequate technical support. **Company:** Jasmine Technologies. **Requires:** Mac Plus; SCSI port. **List price:** \$1349.

### MACINSTOR 100-ZFP

**Pros:** Good utility software. **Cons:** Noisy fan. **Company:** Storage Dimensions. **Requires:** Mac Plus. **List price:** \$1899.



In the end, three of the midsize (80–150MB) hard disks that I evaluated using Macworld Labs' benchmark tests proved more similar than different. Each disk comes preformatted, and includes backup, partitioning, and utility software. And although the speed difference between the three units was minor in normal use (the Jasmine lagged by almost half a minute when duplicating an 11MB folder on the desktop), I found that support after purchase was the determining factor in deciding which drive to buy.

#### DataFrame XP100

The internally terminated DataFrame XP100 stands upright and uses a drive mechanism manufactured by Quantum. Noise from the cooling fan, although noticeable in a quiet room, was not intrusive. The XP100 comes with an excellent set of utilities. The DiskFit backup program backs up to floppies or another hard disk volume. Two print spoolers are included: SuperSpool, for direct connection to ImageWriters; and SuperLaserSpool, for connecting to AppleTalk ImageWriters and LaserWriters. All three of these utilities are special versions that



Three midsize hard disks

work only with DataFrames. Also included is the Manager utility, consisting of an application and a cdev. The Manager application lets you test the drive, change the SCSI ID, or partition the disk. The Manager cdev allows you to mount hard disk partitions, which can then be password-protected and encrypted. The XP100 feels quick in operation, as did the other two tested units.

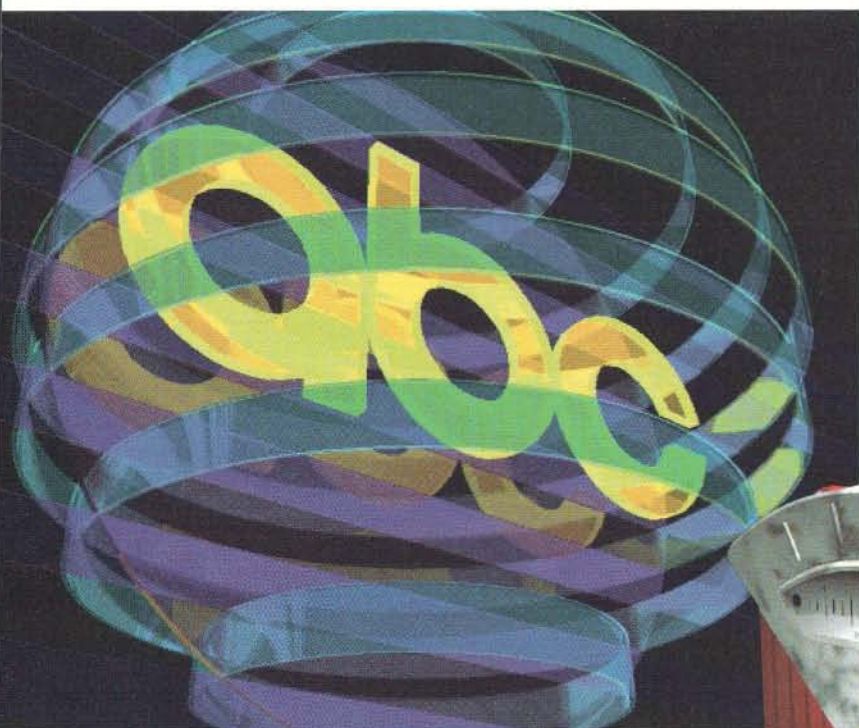
#### DirectDrive 130

Jasmine has made a name for itself by making good drives in smart packages, and by bundling great software with the units. The DirectDrive 130 is no exception. Based on a Fujitsu drive mechanism, the unit has several nice features. There are two AC power outlets on the back of the hard disk; it also has an easily accessible fuse and a push-button SCSI address switch. Placed under the Mac, the DirectDrive 130 adds less than 3 inches in height. The DirectDrive cooling fan was quieter than the DataFrame's. One oddity was that the drive periodically makes a clattering—unlike normal drive access noise—for about two seconds. This wasn't especially annoying and didn't appear to cause any problems. The DirectDrive 130 rated a little slower than the other two units on the SCSI Evaluator and large-folder duplication benchmarks, but held its own when opening Excel and PageMaker files.

Jasmine includes DriveWare, an application and cdev combination, which is comparable to SuperMac's Manager in terms of functions and ease-of-use. DriveWare includes online help for the inexperienced. Jasmine (continues)



# STRATAVISION 3d. SOPHISTICATED GRAPHICS AS SIMPLE AS ABC.



Client: ABC Entertainment/Mark Zakarin. \*Producer: Marks Communications Inc. Creative Director: Harry Marks. Designer: Dale Herigstad.



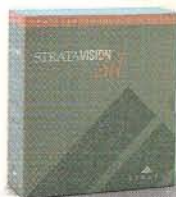
Producer: KCA Architects. Designer: Colin Cathcart. Client: Chess King.

**E**ver since we introduced STRATAVISION 3d, designers, illustrators and architects have been transforming their ideas into great images. Now you can do the same. You'll find STRATAVISION 3d's modeling, scene composition and rendering as simple as point-and-click. Yet our image quality is what you'd expect from expensive graphic workstations. Produce detailed pictures of objects and scenes with shadows, textures, reflections, and with a photo-realistic quality you thought wasn't possible on the Mac. Whether you're rendering a small appliance or a large aircraft; creat-

ing artwork for a newscast or a newsletter; designing a new building or revitalizing an old one, STRATAVISION 3d puts your work in the best possible light. All in full color. All fully three dimensional. All with the ease and simplicity of Macintosh. Call our

Producer: Design Edge.  
Creative Director: Chipp  
Walters. Designer: Mark  
Kimbrough.

toll-free number now.  
Let us show you how  
easy it is to turn your  
ideas into great images.



**STRATA**  
1-800-869-6855 ext. 200

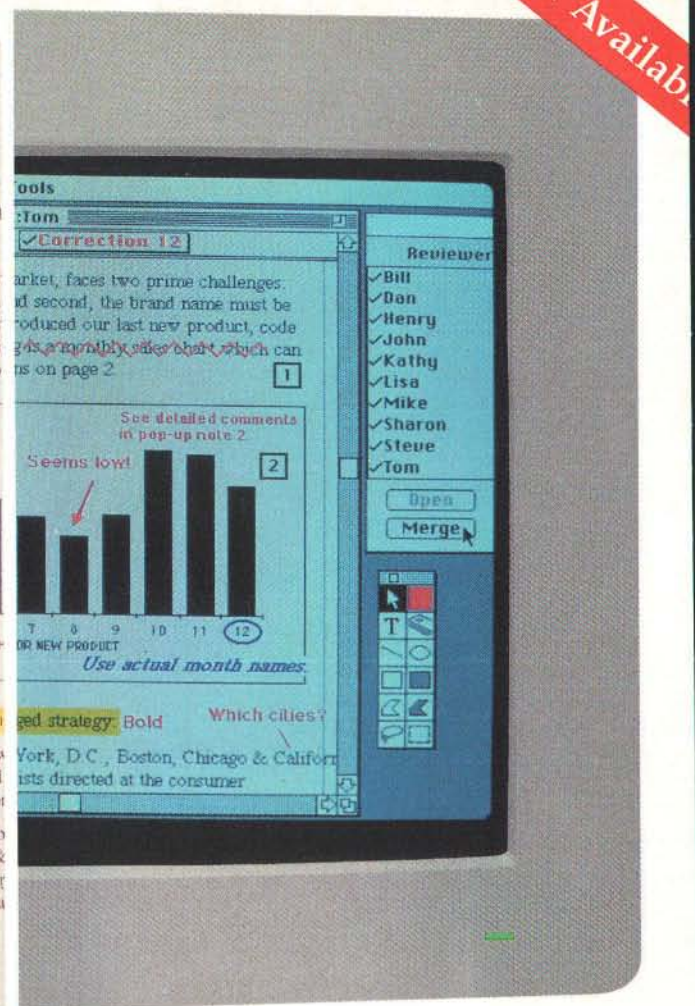
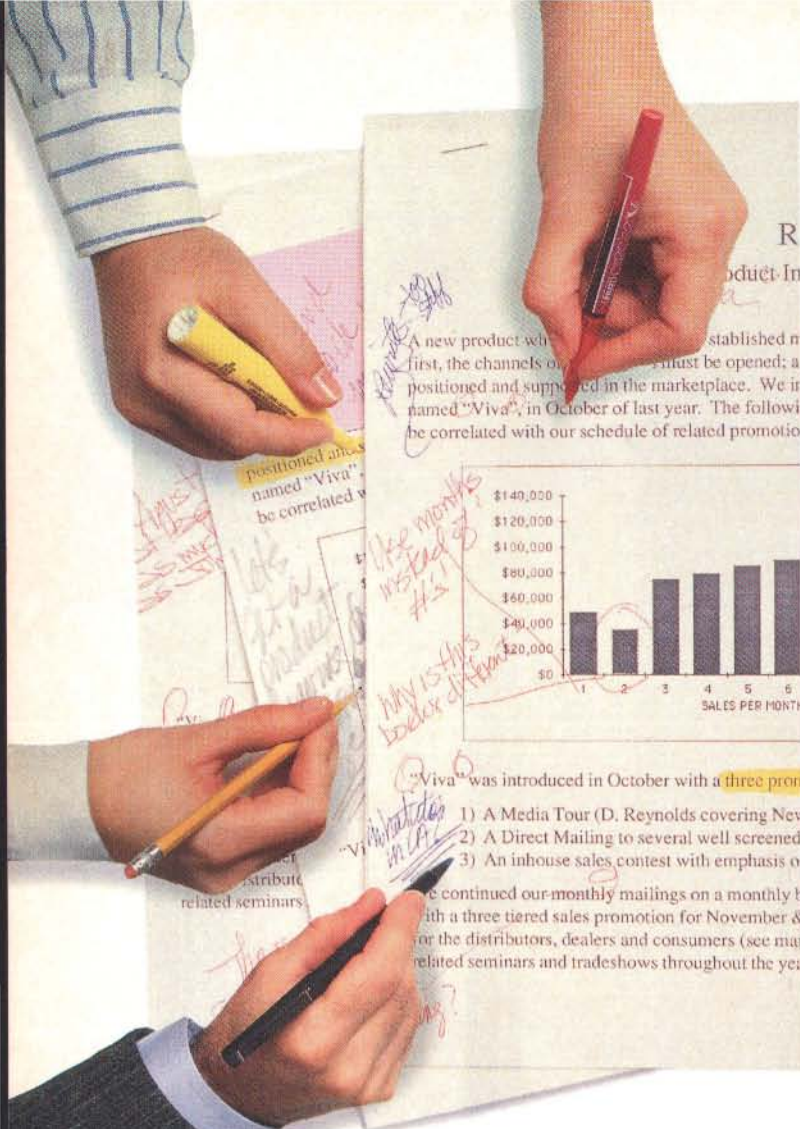
See Us At **MACWORLD EXPO**  
Booth #49, Moscone Center

\*The ABC image, produced by Marks Communications Inc., used STRATAVISION 3d to preview and storyboard concept, and was not used as final broadcast animation. Macintosh is a registered trademark of Apple Computer, Inc. Strata and STRATAVISION 3d are trademarks of Strata, Inc. 349 E. Tabernacle, Suite 201, St. George, Utah 84770.

Circle 504 on reader service card



Now Available



# Make Your Mark, Together

## Introducing MarkUp™, Workgroup Editing & Review Software

It's ironic that documents created with hi-tech efficiency revert to archaic methods for review: lots of paper, red pencils, scribbles, mail delays and wasted time. Now there's real improvement for group editing, review and approval — MarkUp.

Here's how it works: print an image of a Macintosh document to disk from any application with MarkUp Document Creator. Publish it electronically to a workgroup for review.

Group members don't even need the creating application, just MarkUp. Reviewers work simultaneously — on

a network or by transferring files — making comments on transparent overlays of the MarkUp document.

MarkUp provides tools to rewrite, annotate, highlight, strike out, correct, manage and approve documents of all types. It even keeps a journal and status of editing activity.

When review is completed, use MarkUp's powerful merge feature to combine a group's comments and print the annotated document as a basis to rework the original. Better yet, open the original document next to the MarkUp document with Multi-Finder and copy changes directly.

Real productivity improvement means working better — together! Whether your group numbers two or twenty-two, you'll produce higher quality documents in much less time. Reduce paper traffic, meetings and travel. Use MarkUp for reports, drawings, letters, spreadsheets and proposals.

Inquire about MarkUp today. Take a step toward making your mark, together.

For more information or the dealer nearest you, call:

**Mainstay**

5311-B Derry Avenue  
Agoura Hills, CA 91301  
(818) 991-6540

71 rue des Atrebatés  
B-1040, Brussels, Belgium  
322/733.97.91

Please circle 7 on reader service card.



ships the hard disk with a folder called DemoWare, which is a good assortment of about 6MB of public domain, shareware, and demonstration versions of commercial programs. The DirectDrive 130 also comes with Symantec's SUM II disk-utility package, which includes backup, encryption, and optimization programs, as well as one of the best crashed-disk-recovery programs available.

#### MacinStor 100-ZFP

The MacinStor 100-ZFP is built around the same Quantum 100MB mechanism as the DataFrame XP100, so it wasn't surprising that the two units produced virtually identical test results. The MacinStor has external SCSI termination, so you'll have to use the supplied terminator if you put the hard disk at the end of the SCSI chain. You change the SCSI ID with a rotary switch on the back of the unit. The cooling fan was annoyingly loud in a quiet room.

MacinStor's Installer program, which includes an application and a cdev, shares many of the same features as the installers that come with the other two hard disks. Storage Dimensions bundles Central Point Software's PC Tools Deluxe Mac Version with the 100-ZFP. This software includes a Locate DA, recovery applications for crashed floppies and hard disks, a file defragmenter, a backup program, and several other well-thought-out and useful utilities. Although PC Tools Deluxe has many of

the same functions as the SUM II package, the Symantec utilities come with a superior manual and are better integrated to work together.

#### Support Systems

It doesn't matter how good the hardware is if you can't get help from the hard disk's manufacturer when something goes wrong. I placed two anonymous calls to each manufacturer's technical support line over a period of a week. I asked questions about both the hardware and the bundled software. I graded the response according to accuracy, promptness, and courtesy. (None of the manufacturers offer a toll-free number for technical support.)

SuperMac's support staff fared best of the three companies. I was put through to a support technician after a wait of no more than a few minutes. Both people I spoke with there were knowledgeable about the product, were pleasant, and easily fielded my questions. I rated SuperMac's support as very good.

Storage Dimensions put me on hold for a few minutes, then an operator offered to have a technician call me back. I received a callback within two hours, but I managed to stump the technician with a fairly complex question. To his credit, he promised to find out the answer and call me back, which he did within a half hour. I rated Storage Dimensions' support as good.

Jasmine's support was abysmal.

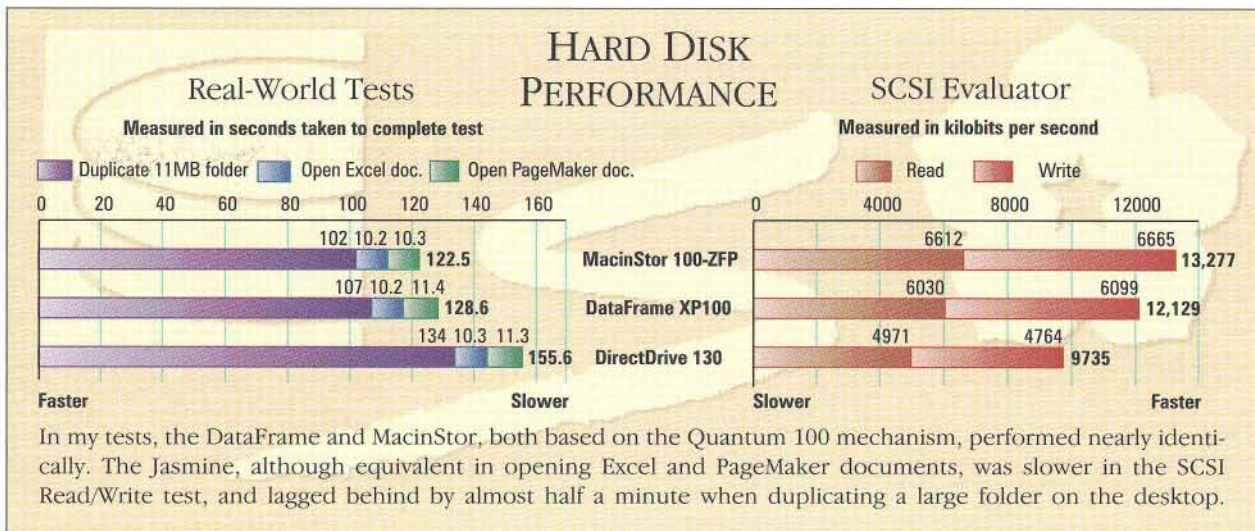
After being put on hold for more than 20 minutes without a response, I called back and asked to speak to a technician immediately. I was told that they were all busy and that if I left my number, someone would call me back later that day. I never received a call. In four separate calls I never spoke to a technician. Jasmine's support rated unacceptable.

#### Which Hard Disk Should You Buy?

None of these hard disks will disappoint you in terms of performance. But with the market as competitive as it is these days, you have to look at the whole picture to make the best choice. The hardware, the bundled software, the product support, and the price are all important.

The Storage Dimensions MacinStor 100-ZFP is a fine unit, but it costs \$300 more than the SuperMac DataFrame XP100, which is based on the same Quantum mechanism. And while PC Tools is a good package, I found the SuperMac utilities easier to use. The Jasmine DirectDrive 130 gives you an extra 30MB of storage for \$250 less than the SuperMac, and has excellent bundled software, but also has unacceptable product support. Although I feel the DirectDrive 130 is the overall best value, because of Jasmine's support problems, I have to rate the SuperMac DataFrame XP100 as the winner.—Tom Negrino

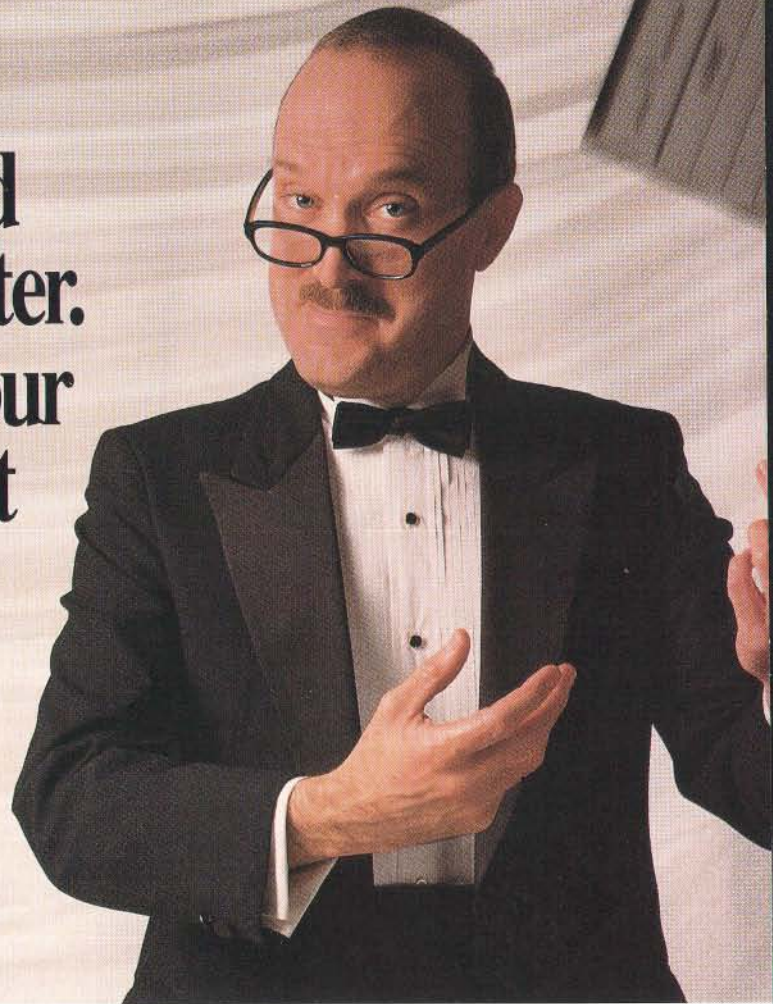
See Where to Buy or circle 724 (DataFrame XP100), 727 (DirectDrive 130), 785 (MacinStor 100-ZFP II) on reader service card.





Dr. Productivity Says:

**"You trashed  
your typewriter.  
Now trash your  
office in/out  
board."**



**"Never wonder where the heck  
George went again."**

"The busier your organization, the more time you waste running around looking for people. 'Where's George? Should we start the meeting? Should we wait? When will he be back? How can I get him the moment he gets back?' Blah blah blah. Time down the toilet. Fortunately, there is a cure."

**"You can let everyone wonder  
where the heck you went. Or let people  
know where you are in a flash."**

"The latter is for smart people. In/Out™ lets you post your whereabouts with a five-second pull-down. Click and go. You can even create short cuts for your frequent outs, like playing tennis, at lunch, at the psychiatrist, whatever. Bang. You're electronically posted. And your own screen gets a 'sleep' message that's a combined screen saver and time saver,

because it shows anyone who looks into your office where you are."

**"If you want exercise, go to a gym.  
If you want to know where anyone on  
the network is, click the mouse."**

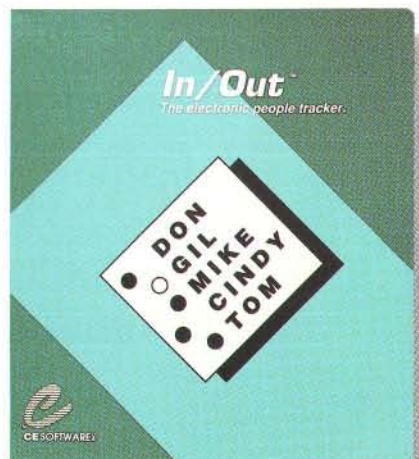
"Anyone can hot-key at any time from any Mac® on the network, and get an instant electronic In/Out board of the entire office, or any department. Click on any individual, and get the details of their return time and whereabouts. Save countless steps."

**"Now your receptionist can stop  
paging everyone to death."**

"Callers will appreciate how quickly your receptionist can locate people. Your operation will run smarter, smoother. Your electronics will astonish your friends. And your reception area will look a lot better. The in/out board is dead. Long live In/Out."

**"Go to a dealer  
and try it."**

For the Macintosh. Suggested retail price: 10 user pak: \$299.95  
Free literature and Where To Buy:  
1-800-523-7638 Dept. CE31.





★  
Point of Sale and Inventory Management

## POS-IM 2.0

**Pros:** A sophisticated, powerful, comprehensive program; excellent use of the Mac interface; imports and exports text files; links directly to Layered's Insight Expert Accounting series.

**Cons:** Some training might be needed if unfamiliar with automated point-of-sale/inventory systems; documentation lacks index; no specs for program capacity.

**Company:** Ensign Systems. **Requires:** Mac Plus; 20MB hard disk. **List price:** \$1795; multiuser version \$2495.



POS-IM (or Point of Sale—Inventory Management) is for businesses with large, complex inventories that require an integrated sales and inventory system. The program competes less with other Macintosh inventory applications than with similar minicomputer programs.

POS-IM makes excellent use of the Mac interface, allowing you to click from summary information to invoices to inventory items. An added advantage of the program is its linkup with Layered's Insight Expert Accounting series. POS-IM feeds its information directly into Insight's Accounts Receivable module, which in turn feeds the data into Insight's General Ledger. If you don't use the Insight system, you'll have to key the data directly into your general ledger program.

POS-IM contains three separate modules: Sales-Point, the point-of-sale program; Inventory-Analyzer, the inventory program; and Accounts-Receiveable. POS-IM includes an excellent 46-page tutorial, a setup guide for the program, and a reference manual. Although the documentation is well written and you get 60 days of free telephone support, you will likely need help in training your employees with the system. I suggest picking a supplier carefully, especially if you are not presently using an automated point-of-sale/inventory system. Learning the program itself is not especially difficult, due in large part to its excellent interface. But learning any point-of-sale/inventory system is by no means a piece of cake, and you might have to depend on your supplier for help.

### Taking Inventory

Setting up the POS-IM system is the starting point, and the program does all it can to help by importing text files with ease and setting up inventory item cards if your import text is in the correct format (formats are defined in the reference manual). All inventory items carry item codes, and the program gives you ample flexibility in assigning your own numbers or using those preassigned by manufacturers. The program integrates with TPS and MSI hand-held light pens, the Metrologic countertop scanner, and the Indiana and APG cash drawers. You can scan merchandise into and out of inventory using preprinted UPC bar codes, or you can create your own alpha character "39" codes.

The program also accounts for serial-number items and prompts you whenever they enter and leave your inventory. A separate database record is available for each serial number item.

You can have up to seven different selling prices, and you can price via formulas using functions within the program. For example, you can price an item at suggested retail price, retail price less 20 percent, retail price less 20 percent less 10 percent, or cost of the item plus 50 percent. The program also offers IF-THEN expressions, date functions, and relational operators (equal to, less than, less than or equal, and so on).

To add items to inventory without scanning, you can type in the vendor

ID number and the order item ID number or you can select the vendor and items from pop-up screens (arranged either by ID number or in alphabetical order). To add new items to the inventory list, you type in an ID number, a description, and a price on an order form; and the program calculates the amount based on the item price and quantity ordered. The next time you use the inventory list, the item appears automatically.

You can also order items from a vendor card. By clicking on the Items icon at the bottom of the vendor card you can see a list of items supplied by the vendor.

Item records contain complete information, including a description, the preferred vendor (which you can change at any time), last cost, average cost, suggested retail, your retail, stock on hand, stock on order, maximum stock, and reorder point. You can also create automatic reorders from the Item screen when stock has been reduced to a certain point.

The item ledger card also has four icons that let you move immediately to the serial number screen, the components screen (for subassemblies), the vendor list, or an order form.

The standard inventory valuation is by average unit cost of all items on hand, with other valuation forms (LIFO, for example) requiring some extra effort. Inventory-Analyzer also allows you to set up various sales-commission codes, with each item carrying its own designated code.

When you create inventory orders, you have the option of posting each order individually, posting in batches, or posting in the background. Since POS-IM takes about 40 seconds to print and post each order, you might prefer to choose either batch or background posting.

### Making a Sale

Because point-of-sale activity is less complex than inventory control, most salespeople can easily be trained in these procedures.

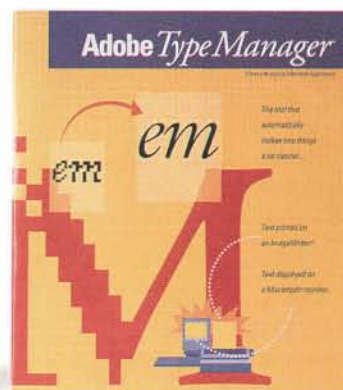
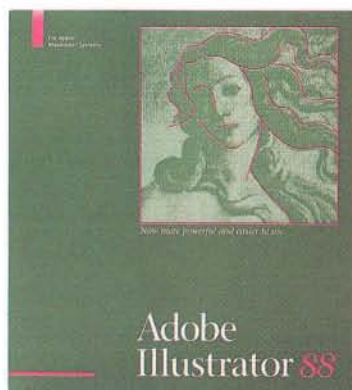
Once a customer file is located (or created), the salesperson merely writes the invoice on an invoice voucher screen that resembles a paper invoice form (see "The Sales Invoice Form"). (continues)

### The Sales Invoice Form

POS-IM's sales invoice form resembles a paper form and is easy to complete. Sale items may be entered by scanner or bar-code reader, by selecting from a pop-up sales-item list, or by typing the item ID number in the appropriate column. When the invoice is complete, the salesperson clicks on the Calc icon (bottom left) to calculate the totals and the Sale icon to move to the payment form. The third icon is for scanned or bar-code data.



# What's new with Adobe Illustrator 88?



For a limited time, when you buy Adobe Illustrator 88™ software, Adobe Type Manager™ software comes along with it, free. So if you want the drawing program used by professional designers and illustrators, buy it now. While you can also improve your type's screen image—without spending a dime. Call 1-800-344-8335 to find your nearest Adobe Authorized Dealer today.

Because what's new today is gone tomorrow.

**ADOBE®**



**POSTSCRIPT®**  
Software From Adobe

Look for this symbol on computers, printers and other products that include PostScript software from Adobe Systems. It's your guarantee of quality and compatibility.

The Adobe logo and the PostScript logo are registered trademarks and Adobe Type Manager, the ATM logo, Adobe Illustrator 88 and the Adobe Illustrator logo are trademarks of Adobe Systems Incorporated in the U.S.A. © 1990 Adobe Systems Incorporated. All rights reserved.



For cash transactions no customer ID is required, and the salesperson enters the cash payment directly on the form.

Upon completion and posting of a sale, all inventory and customer records are immediately updated. POS-IM can also process returns, transfers, labor charges, back orders, gift certificates, and other options in a similar manner. Invoices can also be placed on hold and completed later.

After an invoice is written, credit sales post to the Accounts Receivable ledger. The A/R ledger—which charges interest on past-due accounts, prints statements, and provides reports on receivables—is the easiest module to use. If you link to the Insight Expert A/R module, you can track receivables in that program.

## Reports

You can print merchandise labels and a complete range of reports; on-hand, on-order, and reorder reports for inventory; sales and commission reports; and the usual aged-receivables report. In addition, you can create custom reports by merely copying fields onto the report much as you would move a DA with Font/DA Mover. Custom grids can be used for creating reports that contain items requiring two descriptions (for example, size and color or style and size). Reports can also be saved to a disk file and imported as text to a spreadsheet application where you can rearrange the data or create specialized charts for enhanced formatting.

POS-IM includes a useful Utility file that can be used for setting passwords, checking and repairing databases, or copying databases and rebuilding their indexes.

My main complaint, which is a relatively minor one, is that the program should include information on memory requirements. Businesses with large inventories and several other programs might have to look at expanding hard disk capacity to accommodate the program. Ensign Systems says that data is limited only by disk size and that data can even be spread over additional peripheral hard disks (or hard disk partitions). My only other criticism is the lack of indexes in the documentation.

## On the Whole

If you are managing a heavy or complex inventory manually because you can't afford a minicomputer, or if you're using a personal computer and think you'll soon have to move to heavier hardware, or if you're using a minicomputer and would like to reduce your costs significantly, take a good look at POS-IM. The program is sophisticated and powerful, and its excellent Mac interface makes point-of-sale and inventory control about as easy as these difficult jobs can be. Ensign Systems hasn't left much out of this excellent program.—**Alan L. Slay**

*See Where to Buy or circle 818 on reader service card.*

## ★ PostScript Printer

### FUJITSU RX7100PS

**Pros:** HP LaserJet II emulation; small footprint; second paper bin available.

**Cons:** Cannot feed envelopes; solid blacks lack density. **Company:** Fujitsu America.

**Requires:** Mac Plus. **List price:** 2MB \$3995; 4MB RX7100PS + \$4795.



The first thing I noticed about the Fujitsu RX7100PS is that it sure doesn't look like a laser printer. It has the small footprint, light weight, low profile, and upright sheet-feeder design typical of impact dot matrix printers.

The RX7100PS is a true PostScript page printer, with the same AppleTalk interface, 300-dots-per-inch resolution, built-in fonts, and xerographic imaging system found on the Apple LaserWriter. The Fujitsu printer also includes some nice touches, like an easy-to-read alphanumeric status display and setup menu, an optional software-controlled second paper bin, and built-in emulation of Hewlett-Packard LaserJet series printers (an important plus if the printer might be needed in an MS-DOS environment). But it's not really a laser printer. Fujitsu has replaced the semiconductor laser and rotating mirror used in laser printers with an array of light emitting diodes (LEDs). By simplifying the optics and reducing the size of the xerographic print engine, Fujitsu has squeezed the functionality of a LaserWriter into a package smaller in every dimension, a



**Fujitsu RX7100PS**

pound lighter, and somewhat cheaper than a LaserWriter IINT.

There are some trade-offs, however. While the print engine in a LaserWriter II is rated at 8 pages per minute (ppm), the RX7100PS's engine is only rated at 5 ppm. Whether that is significant depends on how the printer is used. Unless you are printing multiple copies of the same page, most PostScript printers are limited not by the engine speed, but by the speed of the PostScript interpreter. The RX7100PS's PostScript interpreter runs slightly faster than the LaserWriter's, so the time required to print a single page is about the same. Only when printing multiple copies of the same document, or long documents that consist entirely of text without a lot of formatting, is the slower engine in the Fujitsu printer noticeably different.

Much of what I print eventually gets mailed; I need to print an envelope for every three to six single sheets. The RX7100PS, with its optional software-controlled second paper bin, seemed like a natural for my environment. I could load up one bin with paper and another with envelopes, and print letters and envelopes on the fly. The first problem I encountered was that the Macintosh LaserWriter driver doesn't have a provision for controlling dual bins. You can select the bins from the front panel, or even instruct the printer to automatically switch bins when one becomes empty, but you cannot switch bins from the Macintosh. A bigger problem is that, according to the manual, the Fujitsu printer cannot accept envelopes. I ignored the warnings and attempted all kinds of (continues)



# Start with type. End up with style.

Now Supports  
Adobe®  
Fonts



With **TypeStyler™** and your **Macintosh®** you can turn type into an exciting tour de force.

It lets you create dramatic designs that once were possible only with custom illustrations and the most expensive typesetting facilities.

Bend. Twist. Stretch. Rotate. Then, call on an amazing range of styling effects. Fades, gradient and starburst fills. Shadows and patterns. Inlines and outlines. Circular text. Plus a library of background panels that you can shape and style as well.

It's powerful, yes. But it's not overpowering. TypeStyler is amazingly easy to learn and use.

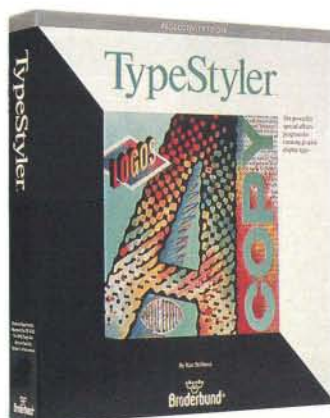
You can even import and export PICT, Paint and EPS file formats.

And export Adobe Illustrator™ outlines. Which means TypeStyler is fully compatible with most popular desktop publishing applications.

In addition, TypeStyler comes with 10 AGFA Compugraphic® typefaces. And you can also work with thousands of other commercially available fonts including Adobe®. All for an introductory price of \$199.95.

Get TypeStyler. And get the difference between type and style.

Available for Macintosh Plus/SE/II/III. Two 800K floppy disk drives or hard disk. System 4.2 or later version.



## Broderbund®

Copyright 1990 Broderbund Software, 17 Paul Drive, San Rafael CA 94903-2101. All rights reserved.

**SEE YOUR LOCAL RETAILER OR CALL 800-521-6263.**

Macintosh, AGFA Compugraphic, Adobe and Broderbund are registered trademarks of Apple Computer, Inc., AGFA Corporation, Adobe Systems, Inc. and Broderbund Software, Inc., respectively. Adobe Illustrator and TypeStyler are trademarks of Adobe Systems, Inc. and Broderbund Software, Inc., respectively.

Dealers circle 231 on reader service card

End users circle 240 on reader service card



tricks for getting the RX7100PS to accept an envelope, all to no avail. I can't even print envelopes using the manual feed. So if your printing needs include a lot of envelopes, this could be a real drawback. Otherwise the paper handling is good. The upright paper bins are easy to check and load, and while they did seem to feed double sheets a bit more often than other printers, the only time I succeeded in causing a paper jam was when I tried to feed an envelope.

The Fujitsu engine uses a single cartridge to replace the toner and electrostatic imaging surface (\$185 replacement cost for approximately 6000 pages). It's a little easier to change a Fujitsu cartridge than it is to change the cartridge on Canon engines (the engine used in the LaserWriter II and many other printers) because of the wide-open design of the RX7100PS. The design also makes clearing the rare paper jams a breeze. Unfortunately, the engine produces blacks that aren't as sharp and dense as those from printers based on the Canon engine. The quality is generally acceptable for text, but documents with large solid black areas aren't as clear and even as they might be, and changing the setting of the front-panel density control doesn't help.

The documentation and support materials are excellent, though the printer design is self-explanatory. As with all PostScript printers I've seen to date, the RX7100PS does not come with PostScript screen fonts on disk, which increases the difficulty of proper printer installation by at least an order of magnitude.

#### Recommend But...

I want to be able to recommend this printer. The RX7100PS is the friendliest PostScript page printer I have seen to date. It is small, quiet, reliable, and easy to understand. It could be a favorite of mine, in spite of its tendency to print less-than-perfect solids. Unfortunately, my need for a printer that will conveniently print envelopes outweighs my need for friendliness. Before choosing the RX7100PS, consider carefully how important dense solids and the ability to print envelopes are to you. —Ron Risley

See Where to Buy for contact information.

#### Music-Notation Program

### MUSICPROSE 1.0

**Pros:** Easy to use; many semiautomatic features; easy transposition of chords and placement of markings; fast.

**Cons:** No tool for setting length of rests; no Undo command; can't extract parts.

**Company:** Coda Music Software.

**Requires:** Mac Plus; second disk drive. Hard disk recommended. **List price:** \$249.



Music-publishing programs for the Mac have been an endless source of aggravation for many musicians. None of the high-end programs widely available really present a viable solution for the working musician who simply needs to print up a lead sheet or horn chart. What has long been missing from the market is a midrange program that transcribes music as it is being played, imports files from a MIDI sequencer program, and offers a suitable array of page-layout tools to produce output that's ready to be published. Coda Software's new MusicProse, based on the company's high-end program Finale, offers the right set of features at a moderate price.

#### Enter without Knocking

Prospective users of a desktop music-publishing system tend to want one thing more than any other: the ability to automatically transcribe music from a keyboard played in real time. MusicProse's HyperScribe mode allows just that. You play music on a MIDI-equipped instrument, provide your own tempo reference by tapping a footswitch, and HyperScribe accurately transcribes every note. If you prefer

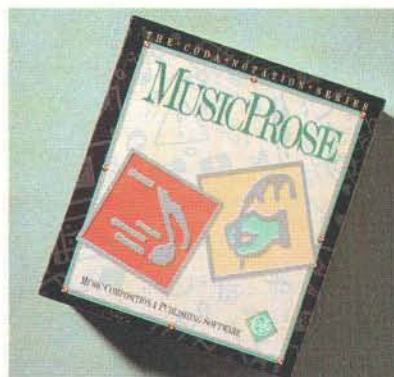
you can play to a steady metronome click, but providing your own tempo reference allows you to play *rubato* phrases and still obtain an accurate transcription.

In addition to real-time transcription, MusicProse offers two other input methods under the Entry menu. In Simple Entry mode, you select a note value (quarter note, eighth note, and so on) from a floating palette or the numerical keypad and simply click on the score to enter notes. Speedy Entry is similar, with the added ability to use the Mac keyboard's arrow keys to move about on the score and select pitches (pitches can also be entered from a MIDI instrument). This is very similar to the step-recording function found on most sequencer programs, and it works quite well. The only strange aspect to MusicProse's Simple and Speedy entry modes is that there are no tools for adding rests of various durations; you must first add a note of the desired value and then use the eraser tool (or the Enter key in Speedy mode) to change the note into a rest. While this works just fine, it would be more intuitive to enter rests in the same way as notes, by choosing them from a palette.

#### Beyond the Entry

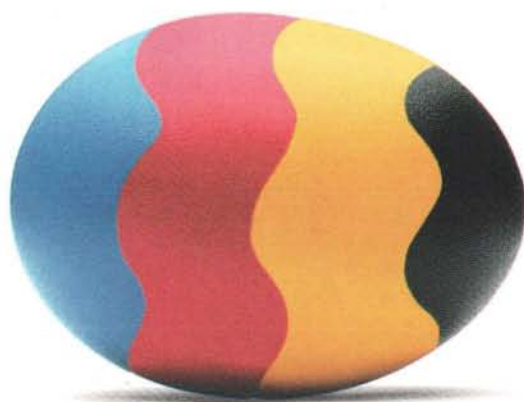
MusicProse gives you eight main tools, each of which has a pull-down menu of its own. The Staff, Measure, and Page menus have commands that affect the position, size, and other attributes of staff systems, measures, and text blocks. Commands like Fit Music and Lay Out Measures let you perform some incredibly useful semiautomatic operations that, for instance, stretch out overly dense measures and help avoid horizontal overlap between lyrics. Staff Transposition is a saving grace for composers because it can transpose a staff for B-flat clarinet, for instance, and play the notes as they should sound, not as they look on the screen (see "Transposing Chords").

The Measure menu is where you'll find commands for copying and pasting chunks of music and setting rehearsal marks, measure numbers, and alternate notation symbols such as slash note heads for notating percussion. Any range of measures can be



MARK JOHANN





ARRIVING THIS SPRING: AGFA COMPUGRAPHIC'S





NEW POSTSCRIPT<sup>®</sup> IMAGESETTERS. **AGFA** 

Circle 460 on reader service card

AGFA and the Agfa rhombus are registered trademarks of Agfa-Gevaert AG. Compugraphic is a registered trademark of Agfa Corporation. PostScript is a registered trademark of Adobe Systems, Inc.



transposed, and can have its own key signature, clef, meter, and style of bar lines. Measure mode forgivably departs from normal Macintosh conventions in that you don't need to use any keys or commands to copy and paste a region of measures: you just select the range to be copied and drag it to the desired destination.

### Express Yourself

You choose markings such as slurs, crescendos, pedal, and dynamic symbols, and text expressions like *Allegro* from four floating palettes accessed from the Expression menu. Simply click on the palette to choose a symbol, and then double-click on the score where you want the symbol to appear. All of these symbols can be freely positioned; slurs, crescendos and decrescendos, and octave markings can be stretched and resized with handles similar to those found in most drawing programs.

With MusicProse you can also edit and analyze any chord, and the program provides the appropriate chord symbol automatically. You can edit chords either using MIDI input or via an onscreen music keyboard. Chord symbols, including guitar fingerboard symbols, are entered using the Chord menu. In addition, there is a user-definable library of chord symbols and suffixes.

Dealing with on-screen lyrics is a breeze, thanks to the Click Assignment function under the Lyric menu. After lyrics are entered, each syllable can be assigned to a specific note entry by clicking on the score. This ensures that each syllable aligns properly underneath the note it's intended for, and

that it stays that way throughout any repositioning of staves and measures.

### Import and Export Duties

MusicProse can import and export any file that supports the standard MIDI File format, although all ornaments and expression markings will have to be added by hand. It's also possible to compile a PostScript listing, or to export an encapsulated PostScript file to programs like Aldus FreeHand or PageMaker so you can incorporate your score into other documents.

MusicProse fully supports laser printer output, although the outline versions of Coda's Petrucci and Seville fonts cost an extra \$89 to registered MusicProse owners. Screen fonts are included with the program.

### Upscale, but Midrange

MusicProse's note-entry and page-layout features rival in elegance those of other applications costing considerably more, but the program does have a few limitations. For instance, a score can have no more than 8 staves; other programs offer 16 or more. Furthermore, you cannot automatically extract and print separate parts; you must save separate files and delete all but one instrument from each. And there is no mode for fine-tuning placement of notes; other programs have a mode in which every symbol on a page can be repositioned precisely. And since exported EPS files cannot be ungrouped, you will have to settle for the default placement of most notes. Finally, MusicProse has one unforgivable shortcoming: there is no Undo command.

Despite the missing Undo command, the lack of a draw program-style object-placement mode, and the eight-staff limitation, MusicProse is a solid program with a reasonably streamlined interface and a healthy set of well-thought-out defaults. MusicProse is probably the best choice for anyone who needs no more than eight staves per score, and is a sensible solution for sequencer users who simply want to print lead sheets, horn charts, and the like. It is flexible, fast, and not at all confusing; compared to its competition, that's saying a lot.

—Charles Clouser

See Where to Buy or circle 801 on reader service card.

### Digitizing Tablets

## KURTA STUDIO FOR ALDUS PRODUCTS

**Pros:** Full optimization for efficient use of Aldus software; lifetime warranty; tool icons laid out adjacent to drawing area. **Cons:** Proportionally small drawing area; clunky stylus.

**Company:** Kurta Corporation.

**Requires:** Mac SE. **List price:** \$1295.

## PERSONAL WRITER PW10 SL

**Pros:** Easy macro recording; sleek, lightweight design; proportionally large drawing area. **Cons:** Small command buttons. **Company:** Personal Writer.

**Requires:** Mac 512KE. **List price:** \$799.

## WACOM SD-420L

**Pros:** Cordless, slim, pressure-sensitive stylus. **Cons:** Heavy; scant support for pressure feature. **Company:** Wacom.

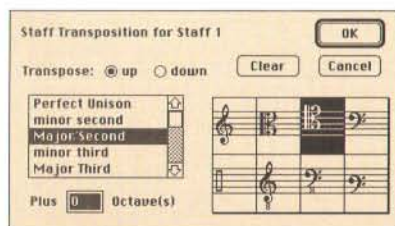
**Requires:** Mac Plus. **List price:** \$795.



Digitizing tablets are designed to be an artist's keyboard, the ultimate input device for transporting a designer's creative cargo to the screen. The three tablets I evaluated—from Personal Writer, Kurta, and Wacom—approached this ideal from different angles. Nevertheless, I can recommend all three in good conscience, though each would go to a different artist with different needs.

The distinction between these tablets lies more in task orientation than in performance quality. All are high-resolution, highly responsive input devices. And once you've installed the driver software and set the DIP switches, there are few surprises. Choosing the right tablet is more a matter of feature preference than of avoiding any drawbacks.

All three companies include driver software with their tablets and let you choose from several pointing-device options: corded pen, cordless pen, or button cursor. Personal Writer and Wacom offer tablets in a variety of sizes in addition to the ones I reviewed. (continues)



### Transposing Chords

This dialog box lets users set a transposition for notes displayed in any staff, without changing the pitches associated with that staff. This means you can set transpositions for instruments that are not in the key of C, without changing the pitches that will sound on playback.

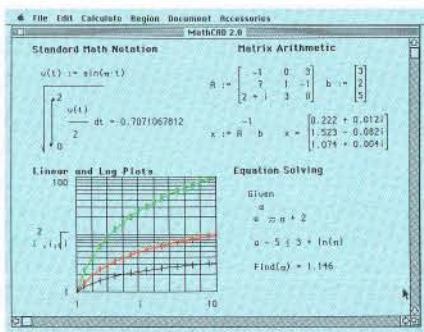


# After centuries of practice, mankind perfects engineering calculations: MathCAD.

## Announcing MathCAD: A Calculating Renaissance For Your Mac.

What the historians will call it, only time will tell.

Perhaps the Century of Speed, or the Era of Ease. But whatever the name, this is the age of MathCAD, the only math package that looks and works the way you think.

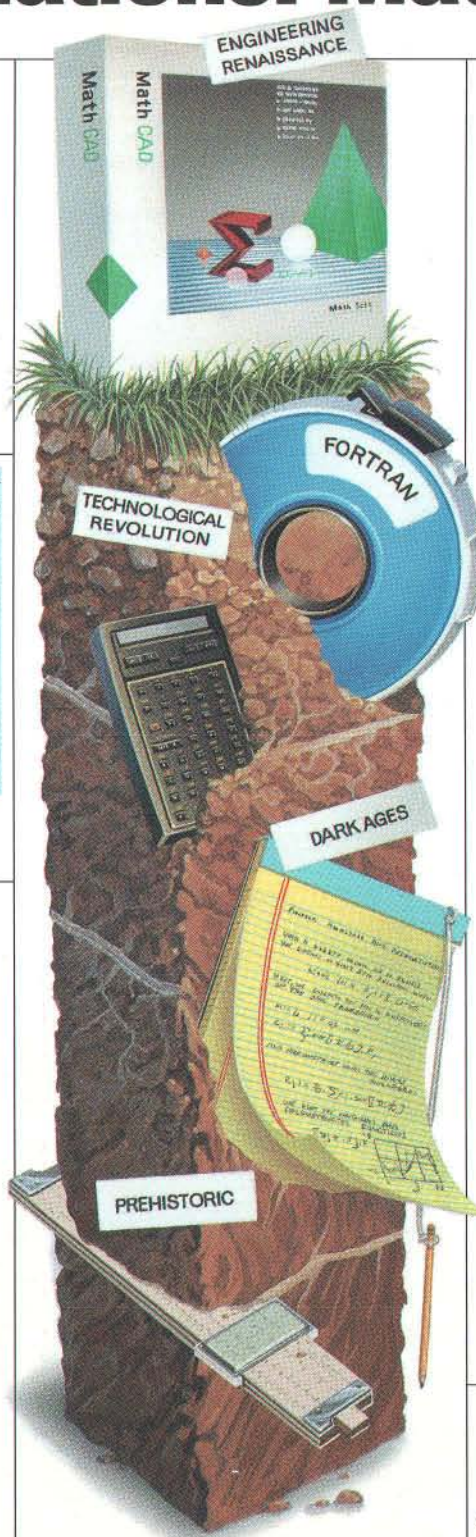


*MathCAD takes full advantage of the Macintosh® interface, with features that make it simple to enter operators and Greek letters into equations.*

MathCAD is the best selling math software in the world because it lets you perform engineering and scientific calculations in a way that's faster, more natural and less error-prone than the way you're doing them now—whether you're using a scratchpad, calculator, spreadsheet, or program that you wrote yourself. It gives you more control and more flexibility than ever before.

MathCAD's live document interface™ lets you enter equations anywhere on the screen, add text, and graph the results. Then print your analysis as a presentation quality document.

And it has over 120 commonly



used functions built right in, for handling all kinds of equations and formulas, as well as exponentials, differentials, cubic splines, FFTs and matrices.

No matter what kind of work you do, MathCAD has a solution for you. In fact, it's used by over 50,000 engineers and scientists, including electrical, industrial, and mechanical engineers, physicists, biologists, and economists.

But don't take our word for it. Just recently MathCAD was reviewed as being "everything you have ever dreamed about in a mathematical toolbox." And when it was compared to the competition, it was "MathCAD by a mile."

And if you work with an IBM® PC or compatible, there's a MathCAD version designed exclusively for you. Or if you use both Macs and PCs, don't worry: MathCAD files are completely compatible between the two.

Look for MathCAD at your local software dealer. Or call MathSoft at 1-800-MATHCAD (in MA, 617-577-1017) for more information or for a free demo disk.

Speed, power and flexibility. Enter the new era of engineering and scientific calculations, with MathCAD.

*System Requirements: Apple Macintosh Plus, SE or II, with a minimum of 1MB RAM. Supports all Image Writers® and Laser Writers®.*

# MathCAD®

MathSoft, Inc. One Kendall Square, Cambridge, MA 02139



Personal Writer also offers a tablet with optical-character-recognition (OCR) software that, according to Personal Writer, translates handwriting into typewritten data. One of Wacom's tablets offers a static-hold option that keeps a piece of paper or an overlay in place. The Kurta Studio for Aldus Products is preprogrammed, and it's customizable enough to do everything but mail in the registration card for you.

#### Personal Writer PW10 SL

The lightweight, space-efficient Personal Writer PW10 SL is the general-purpose tablet of the group. A handy tilt bar lets you adjust the tablet to lie flat or at a comfortable drawing angle of 6 degrees. The corded stylus is slim and highly responsive and has ink cartridges for drawing on paper. The tablet has a cork surface to hold the paper or an overlay in place.

A 2½-inch strip along the left side contains the PW10 SL's "cockpit"; it even has a tiny keyboard for entering minimal text (such as a file name) without leaving the tablet. The controls—a comprehensive array of macro buttons and sets, menu-command buttons (Quit, Save, Cut, and Paste), and so forth—are sensibly arranged but are too small. Even after practice, I could perform few operations without looking down at the tablet to check my position.

The PW10 SL lets you define up to 400 macros (10 sets of 40 each). The control area features 40 macro buttons; below these are 10 more buttons, which let you choose which set of macros is currently operating. Fortunately, you can name both individual macros and macro sets as you define them. Still, I'm skeptical about the usefulness of this vast empty arsenal—achieving full macro functionality could take a great many hours, even though the recording procedure is simple to learn.

The control strip also contains a mouse area for keeping your place in the active area of a drawing tablet. In addition, the mouse area allows you to select objects rapidly in drawing programs or to access that one menu item for which you neglected to record a macro.

The PW10 SL also has a scaling feature, another handy way to work

with unwieldy sketches or renderings. The tablet allows you to adjust the live drawing area to proportionally match the size of your drawing.

#### Kurta Studio for Aldus Products

The Kurta Studio for Aldus Products allows for basic digitizing-tablet functions, plenty of programmable macros, and scaling and mouse-area features comparable to the PW10 SL's. It has been optimized to work with Aldus PageMaker, FreeHand, and Persuasion (and plans have been announced to optimize the tablet for other products, so stay tuned). To an Aldus faithful, using the Kurta Studio is like getting picked up in a limo to go to work. Under the standard tablet's plastic protective sheet rests a glossy heavy paper overlay with commands for all three Aldus programs; font options; and universal commands such as Revert, Save, and Undo. Around the drawing area are icons for the familiar Aldus tools—a handy arrangement.

The Kurta Studio comes equipped with preprogrammed commands for the Aldus trio and CE Software's QuicKeys, a macro program, which encourages additional customization and programming of the 23 function keys that lie along the top of the tablet. Kurta even includes a permanent-ink pen and labels for identifying custom macros on the overlay. The function key row is a standard Kurta design, also built into its low-end models.

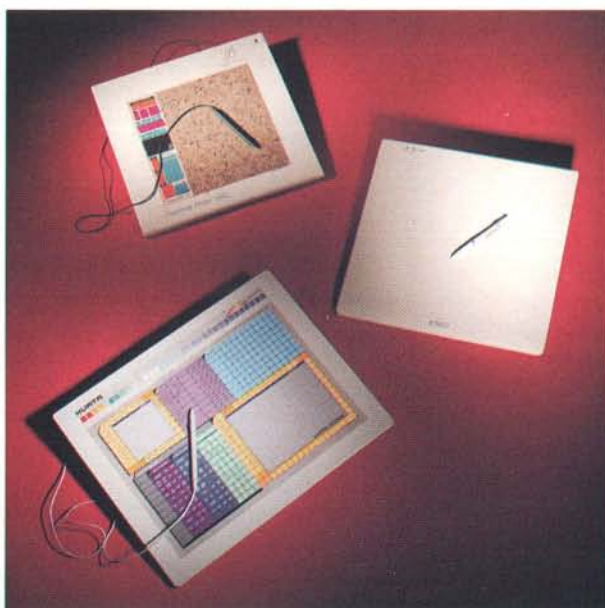
The Kurta Studio's drawing area is somewhat miserly. While the PW10 SL controls are too small, certain of the Kurta Studio's are too big—at the expense of live drawing area. This also means lots of travel time for hand and stylus. The drawing area corresponds to Mac SE screen size; rather than accommodating larger monitors.

At 12 by 17 inches the Kurta Studio is the largest of Kurta's tablets. The Aldus-optimized overlay is described in the manual as a template. You can disable the overlay and still keep the function-key macros operable. The discussion of macro-recording options and the use of the term *template* was somewhat confusing. The tablet also requires the installation of two sets of software (three if you count QuicKeys.) And in fact, the entire process of macro recording is unduly complex, especially in comparison with the PW10 SL's. You have to become familiar with the QuicKeys manual, and you must record macros on the template itself rather than with an on-screen naming option as provided by the PW10 SL. The Kurta styluses are also rather clunky in comparison with the other contenders.

#### Wacom SD-420L

The Wacom SD-420L is more useful for drawing and sketching than for drafting or technical applications. What makes the SD-420L a magic slate is its

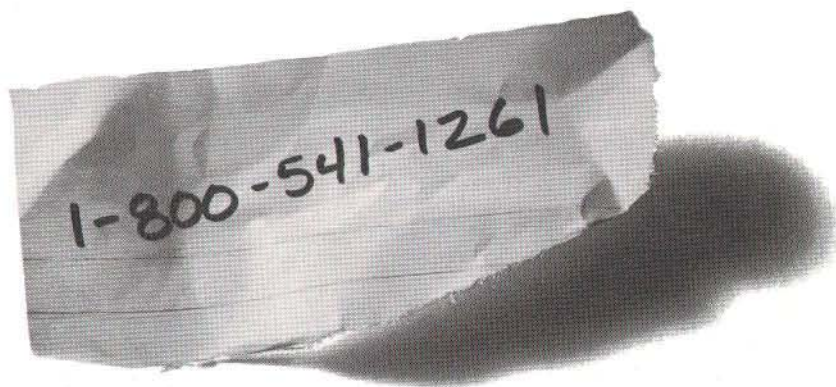
(continues)



Three digitizing tablets: the Personal Writer PW10 SL (top), the Kurta Studio for Aldus Products (bottom), and the Wacom SD-420L (right).

MARK JOHANN





# With a simple 11-digit code, you can access virtually every computer in your corporation.

No, this isn't an appeal to some bizarre group of computer hackers. Rather, it's an invitation to dial the number shown above.



By doing so, we'll send you our comprehensive report on electronic mail technology. And you'll discover how easy it is to get people communicating across the entire corporation.

Regardless of the hardware platform or electronic mail systems in place.

The reason, quite simply, is Microsoft® Mail version 2.0 for AppleTalk® networks has hooked up with the industry's leading connectivity vendors.

Now, thanks to Soft-Switch it's possible to link Mail 2.0 to most major email systems, including PROFS®. While with Alisa Systems or Pacer Software, you can connect to VAX® based systems. Even use the VAX as a Mail 2.0 server. And through Touch Communications, enterprise-wide messaging with X.400 is just a gateway away.

So hook up with us. You'll find we're a solution worth tapping.

**Microsoft®**  
Making it all make sense™

For more information, call (800) 541-1261, Dept. K77. Outside the U.S. and Canada, call (206) 882-8661. In Canada, call (416) 673-7638. ©1990 Microsoft Corporation. All rights reserved. Microsoft and the Microsoft logo are registered trademarks and Making it all make sense is a trademark of Microsoft Corporation. PROFS is a registered trademark of International Business Machines Corporation. AppleTalk is a registered trademark of Apple Computer, Inc. VAX is a registered trademark of Digital Equipment Corporation.



cordless, pressure-sensitive stylus. Simply put, the slim, superbly streamlined stylus responds to pressure so that as you move the stylus across the tablet you lay down thicker lines with heavier pressure and thinner lines with lighter pressure. The stylus responds just like a paintbrush or a stick of charcoal. At first I thought I'd just lost my objectivity, but I watched the most jaded, technically savvy artists shake their heads and grin as they sketched using the SD-420L. When I reviewed the tablet, only Wacom's demo drawing program took advantage of the pressure feature, but Deneba Software's UltraPaint is the first of what Wacom hopes will be many commercial applications incorporating the technology.

The design of the Wacom tablet, especially in contrast to those of the Personal Writer and Kurta tablets, is zenlike and unpretentious. There are, however, a few peas under the mattress. The SD-420L is heavy—nearly 10 pounds—outweighing the other two tablets by a long shot. (In contrast, Wacom's latest SD-510 6-by-9-inch tablet weighs in at a sprightly 1.9 pounds). And I found the packaging and advertising somewhat misleading. Wacom's literature always refers to the SD-420L as a "cordless digitizing tablet." In fact, it requires two cords, one to the Mac and one to an electrical outlet; only the stylus is cordless, and I wish they'd just say that.

Each of the tablets I looked at has the potential to be a primary tool for an artist or designer. I was impressed by the hand-to-screen accuracy of all, having worked with tablets in the past that had flutters or that sent wild signals with the slightest slip of the pointing device. As I worked with the tablets and watched other artists become accustomed to them, it was encouraging to see moderately priced, desktop-sized tablets holding their own against the sketch-and-scan and mouse-drawing methods many designers have cultivated. It seems possible that a wide variety of visual artists might soon enjoy an easier path from concept to on-screen realization.

—Annie Jenkel

See Where to Buy or circle 781 (Kurta Studio), 814 (Personal Writer), 863 (Wacom) on reader service card.

★  
Arcade-Style Game

## LEPRECHAUN 2.6

**Pros:** Addictive; easy to learn, yet difficult to master; supports 256 colors; game editor included. **Cons:** No solutions supplied; user-created levels may have no solutions; can't use arrow keys. **Company:** Shodan.

**Requires:** Mac Plus. **List price:** \$59.



Leprechaun is an addictive arcade-style game. It is spectacular in 256 colors, but looks almost as good—and plays as well—in black and white. The premise, to move the leprechaun king until he pushes a pot of gold onto a rainbow, is deceptively simple. There's more strategy involved than you think at first. Like all good arcade games, it's easy to learn, but difficult to master.

### Do You Want to Play a Game?

Pushing the pot of gold onto the rainbow involves constantly avoiding such enemies as birds, trolls, troglodytes, and snails. Each moves in a specific fashion. Birds wander back and forth in straight lines; troglodytes wander aimlessly; snails move at random too, but slower than troglodytes; trolls are smart enough to follow you around. Contact with any of them kills the leprechaun king immediately. Most levels are studded with thorns, which also kill the king. Not everything is deadly; there are also shamrocks, which you can collect and throw at enemies. Each shamrock stuns an enemy for a few seconds, and throwing several of them



### The Cliff of Despair

Pushing the pot of gold the wrong way (in this case, to the right) can make it impossible to complete the level. The leprechaun's path is shown in red. To win this level the player must push the pot along the path indicated in gold. (Note: The red and gold path lines have been drawn in and do not appear in the program.)

at a time freezes an enemy for longer. Finally, there are rocks and balloons, which can be pushed off ledges onto enemies.

The game is made up of scenarios, which are collections of levels; successfully completing one level allows you to move to the next. To get started with Leprechaun, the first scenario you should master is called Basic Techniques—a series of simple incremental learning levels that teach you skills that help you improve your score.

After mastering Basic Techniques, you can move on to the actual game. It has more than 100 levels, and after months of play, there are still many I haven't completed (see "The Cliff of Despair"). In some levels it's easy to push the pot of gold into a position that makes it impossible to move the pot onto the rainbow. Then you have to use the game's Abandon feature, which kills the king and starts the level over. You get four kings per game, but you earn an extra one for every 16 small pots of gold that you collect.

In case you manage to master all of the supplied levels, the game includes an editor that lets you create new levels and scenarios that are as complex or as simple as you like. Unfortunately, there is no way of checking if the level you create is indeed solvable. Leprechaun comes with a scenario entitled Kiddy Land. It's chock-full of adorable sounds—the kids in our neighborhood loved the squeal of the birds and the squishy sound the falling rocks make when they kill an enemy.

I have only a couple of gripes about Leprechaun. First, no solutions are provided for the supplied scenarios. If you can't figure out how to solve a level, you're stuck. Hints would help. Although the king can be controlled with the mouse or user-configurable keys, the arrow keys, which I prefer for games like this, cannot be used.

But these are minor quibbles. Leprechaun is a winner in my book—an enjoyable, intriguing, and thoughtfully designed game. It's also extremely addictive. Gamers young and old will find themselves slinking back to the Mac at all hours, muttering, "I'll just play one more game. Really. Just one."

—Bob LeVitus

See Where to Buy or circle 782 on reader service card.



# Chaos Management Now!

Introducing

# KeyPlan™

The Key To Getting Things Done



## From Outline to Deadline

### • Good plans start with simple Outlines!

Only KeyPlan allows you to outline what needs to be done and quickly turn it into a full-blown plan.

### • Turn your outline into a Flow Chart!

Only KeyPlan allows you to quickly turn your outlines into Plan Views. Real PERT graphs that show the dependencies of the steps in your outline.

### • Click the mouse and now it's a Timeline!

KeyPlan™ also provides instant Bar Plan Views (GANTTs). Fully flexible and totally integrated with the outline and other Views.

### • Click again and make instant Charts and Graphs!

Graphing is built-in, with presentation-quality area graphs, line graphs, bar charts and scattergrams. Powerful, flexible, and easy!

### • Create Reports on any aspect of your plan!

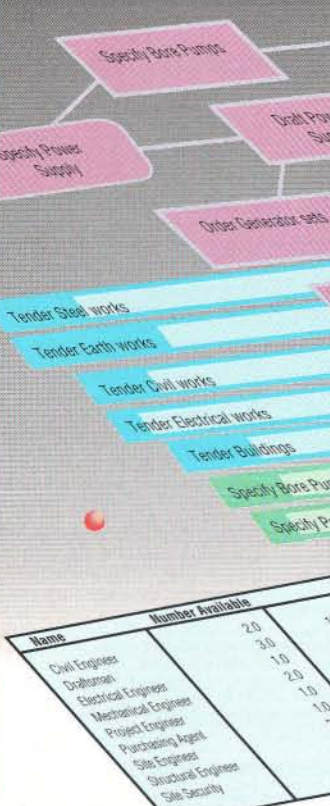
List View allows unlimited custom reports using your own criteria. Export the data to any spread sheet or word processing program.

### • You can easily track Costs and Revenues!

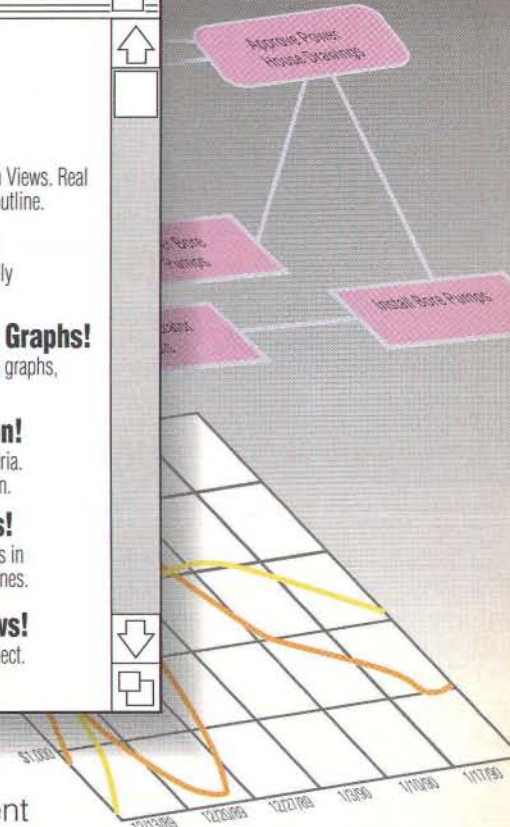
Optimizer provides instant continuous monitoring of plan status in time and costs. Traking monitors actual against planned timelines.

### • Resource List links to plan and all 5 Views!

Helps manage all the people and resources involved in the project. Information instantly updates all the other Views in KeyPlan™



Name	Number Available	
Civil Engineers	2.0	10.0
Drabson	3.0	
Electrical Engineers	1.0	
Mechanical Engineers	2.0	
Project Engineers	1.0	78.90
Purchasing Agent	1.0	45.10
Site Engineers	1.0	89.24
Structural Engineers	2.0	
Site Security	4.0	65.51



Stop feeling guilty about never liking the project management programs you've used. It wasn't just you.

KeyPlan™ does project planning the way it should have been done. Turn fast outlines into successful deadlines. Any plan, no matter how big, can be viewed in many ways—instantly.

Speed and ease of use for the light user; power and sophistication for the professional Project Manager. KeyPlan™...the key to getting things done.

**Call:**  
**800/624-2485**  
**Toll Free**

Only \$10 for your complete KeyPlan Demo.

# Symmetry



8603 E. Royal Palm Rd. • Suite 110 • Scottsdale, AZ 85258 • (602) 998-9106 • Applelink: D0031

Circle 302 on reader service card



★  
Custom On-Screen Calculator Tool KitCALCULATOR  
CONSTRUCTION  
SET 2.06

**Pros:** Many useful calculation, conversion, and display functions; calculator functions and appearance easy to design; straightforward programming language; excellent compatibility with HP-41C calculators. **Cons:** Lacks standard Undo and Cut, Copy, and Paste features for calculator design functions; lacks built-in conversion and display functions for weight and volume. **Company:** Dubl-Click Software. **Requires:** 128K Mac. System 6.03 recommended. **List price:** \$89.95.



When Dubl-Click Software subtitled its upgrade to Calculator Construction Set (CCS) "the 2.0 Power Version," they weren't fooling around. CCS 2.0 is a rich system for creating custom software calculators. Few people will fully exploit its mathematical potential, but no matter: CCS remains accessible enough for anyone who needs even a little boost in calculating power.

**Calculator du Jour**

CCS starts with the unarguable premise that no one calculator is right for everyone and takes this axiom to its ultimate conclusion. The program's first line of attack is simply to supply completed calculators that you can immediately put to use. Included in the 61-member potpourri are near-perfect emulations of several popular Hewlett-Packard programmable calculators; a calculator that adds, subtracts, and multiplies time (minutes and hours); one for balancing a checkbook; several converting calculators (from barrels of oil to quarts, degrees Kelvin to degrees Fahrenheit, and so on); and three different flavors of programmer's calculators. Among a grab bag of special-purpose machines, there's one that does typesetter's conversions, one that figures the rise and run of rafters, and a periodic table of the elements (click on an element, and you're given its atomic number and atomic mass). If you can put two or three of the prefab models to regular use, they

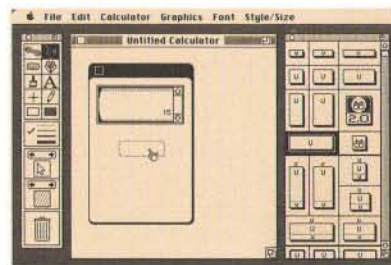
alone will justify CCS's purchase price. Nevertheless, it's the ability to build your own calculators that makes CCS so unique and so fascinating. You can start from an existing calculator, work from one of 15 supplied templates, or design your own new calculator from scratch. I used the first approach to expand one of the prefab programmer's calculators into one tailored to the needs of the PostScript programmer, featuring an octal notation display and conversions between the coordinate systems of PostScript and the ordinary measurements.

**Build Your Own**

No matter which approach you take, however, the mechanics of calculator design with Calculator Construction Set are simple and straightforward. A screen palette holds a miscellany of parts for your calculator: keys, buttons, and various display elements. All you do is drag the parts you want to add from the palette to their destination on the calculator (see "Calculated to Please"). Once a part is in place, you must then wire it to perform a particular function.

You can, for instance, hook up a key as a number or letter for input; as any of a myriad of built-in functions, from simple arithmetic operations to complex statistical calculations; or as a trigger for your own program (more later about programming with CCS). In fact, you can write external functions in C, Pascal, or assembler and call them from calculator keys. In the finished calculator, you activate each screen key by clicking on it, and if you design the appropriate connection, you can activate screen keys by pressing keys on the Mac's keyboard. You can label each key however you like, and you can place text and PICT graphics anywhere on the calculator.

Display parts include a variety of imitation LEDs (for showing single numbers), a scrolling facsimile of a paper-tape printout (that records all entries and calculations), and a monthly calendar. As with the keys, you can wire many of the LED readouts to suit your needs. For example, you can have separate LEDs showing the same value in different numeric systems, such as decimal, hexadecimal, octal, and binary notation. Just as eas-

**Calculated to Please**

Calculator Construction Set 2.0 provides two tool palettes, one for adding keys and display elements to your nascent calculator, the other for manipulating it, as shown on either side of the screen. The center of the screen is devoted to the work space in which you actually assemble the calculator.

ily, you can configure an LED to read out in hours and minutes, feet and inches, or yen. You can also wire LEDs to display the current value of any of CCS's 255 memory registers (temporary numeric parking places). Being able to see the numbers you've stored means you don't have to guess which memory register to recall during a complicated calculation.

**Don't Make a Mistake**

With all the flexibility of its design tools, it's surprising that the program lacks standard Macintosh editing functions. You can drag a selected calculator part around on the screen or dump it in a special trash can—but you can't cut, copy, or paste. Worse yet, there's no Undo command.

The CCS programming language has been overhauled to make it closely compatible with that of the HP-41C series calculators. That was a wise decision, since the 41C family is widely used by engineers and its language is a model of terse power. Though CCS still doesn't duplicate the HP language precisely, you'll be able to easily modify any existing 41C program to run on a CCS calculator. Besides, most of the remaining disparities represent improvements, additional CCS features not available in the 41C. For example, CCS boasts financial functions in abundance that are missing from the 41C. What's more, individual scripts (programs) can be as large as 32K in CCS, a size you can approach only with add-on memory modules in the 41C. Given the wealth of programming functions, and the fact that CCS lets you call one

(continues)



OUR MOST POPULAR PACKAGE

RUSH LEASE APPROVAL AND DELIVERY NATIONWIDE

# LEASE

## YOUR MAC!

BUSINESS LEASES AT AMERICA'S BEST RATES!

Macintosh IIcx  
\$267 Per Mo.  
deposit: \$570

The power of success is here!  
• Mac II cx Power  
• 105 MB Hard Drive  
• 8 MB Ram  
• 14" Color Monitor  
• Extended Keyboard  
• Quickor Kare  
• Extended Service (PACKAGE #LP22)  
List price \$7500

MAC SE  
\$132 Per Mo.  
deposit: \$300

"START UP" BUSINESS PACKAGE  
Step up to a new level of efficiency  
• Mac SE CPU  
• 65 MB Hard Drive  
• Extended Keyboard  
• Quickor Kare  
• Extended Service (PACKAGE #LP44)  
List price \$3700

### "EXECUTIVE" BUSINESS PACKAGE

Your powerful new executive assistant...  
• Mac SE/30 Power  
• 65 MB Hard Drive  
• 5 MB Ram  
• Extended Keyboard  
• Quickor Kare  
• Extended Service (PACKAGE #LP33)  
List price \$5400

MAC SE/30  
\$191 Per Mo.  
deposit: \$416

LEASING MAKES GOOD SENSE!

### CONSIDER THESE ADVANTAGES:

- Leasing is FAST and EASY!
- Get more computer for your money -- Leasing costs less!
- Tax advantage (payments can be a deductible expense).
- Have the system you need NOW when you need it!
- Leasing lets you conserve your working capital.
- Equipment pays for itself.
- Have flexibility to expand.

H.P. Desk Writer  
Lease for \$41 p/mo.  
Initial deposit: \$117  
Sell price list: \$1125  
NT 300dpi Laser  
Lease for \$153 p/mo  
Initial deposit: \$340  
Sell price list: \$4287  
NTX 300dpi Laser  
Lease for \$221 p/mo.  
Initial deposit: \$477  
Sell price list: \$6200  
400dpi Laser  
Lease for \$256 p/mo.  
Initial deposit: \$548  
Sell price list: \$7200

### PRINTERS



SCANNERS  
Xerox Data Copy 730GS  
Lease for \$62 p/mo.  
Deposit: \$158 Sell list: \$1700

### MONITORS

19" Full Page Display  
Lease for \$62 p/mo.  
Initial deposit: \$158 Sell list: \$1700  
19" Sony Color Display  
Lease for \$180 p/mo.  
Initial deposit: \$395 Sell list: \$5050

### GRAPHICS PACKAGE

...the speed and sheer power to out-do yourself.  
• Mac II ci FAST!  
• 105 MB Hard Drive  
• 8 MB Ram  
• 13" Color Monitor  
• 24 Bit Color Card  
• Extended Keyboard  
• Quickor Kare  
• Extended Service (PACKAGE #LP55)  
List price \$9780

Macintosh IIci  
\$346 Per Mo.  
deposit: \$728

### BUSINESS PUBLISHING PACKAGE

The power to say it YOUR way...  
• Mac II cx  
• 105 MB Hard Drive  
• 8 MB Ram  
• 19" B/W Monitor  
• 14" Color Monitor  
• Extended Keyboard  
• Quickor Kare  
• Extended Service (PACKAGE #LP66)  
List price \$12000

Macintosh IIcx  
\$440 Per Mo.  
deposit: \$904

### HERE'S HOW:

Just call with your business info, trade references & bank contact. We'll quote your package and will ship your order the next day pending credit approval!  
Business & Professional leases are straight month term with first and last prepaid and a \$1 buyout. All leases are subject to credit approval and a 2 year business history.

LEASING IS EASY AS 1-2-3

## EATON FINANCIAL CORP.

Eaton Financial Corporation, with offices nationwide, saves you money by providing the most competitive and flexible leases available. Eaton Financial Corporation and MacFriends are working together to serve you even better! Join the many satisfied businesspeople who benefit by leasing their Mac systems from MacFriends.

WE SPECIALIZE IN MAC PRODUCTS. SEE OUR ADS ON PAGES: 28, 52, 250

DO YOU CARRY MACS?

NO, WE FIND IT'S FASTER TO SHIP THEM!

QUICKOR KARE  
• PARTS  
• LABOR  
• LOANER  
• REPLACEMENT

EVERY LEASE COMES WITH 2 YEARS OF QUICKOR KARE EXTENDED SERVICE!

Mac Friends



CALL NOW TOLL FREE 800 331-1322

• DAVID SCOTT GOODWIN •



Those beautiful ideas in your head need to go on the overhead just as beautifully, but your artistic ability or the guy in graphics just won't cooperate.

But the 4693DX Color Image Printer will. It uses a 300-dpi thermal-wax process in 16.7 million colors so images and type are bright, glossy, and very impressive.

And it prints on paper or transparencies for presentations, overheads and comps, with infinitely more fiscal responsibility than pricey outside services.

The Tektronix 4693DX. It's the perfect printer to have up your sleeve. Call for more information, 1-800-835-6100 Dept. 1C, or fax to (503) 682-3408.



**Tektronix®**  
The best and the brightest.

# Magic without the markers.

Investors  
EX

Taxable Bonds  
CDs  
Money Funds

Stocks

## AGF Video Game Distributors

Quarterly Report

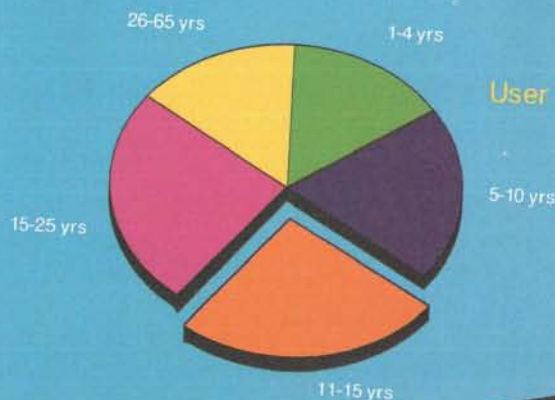
### HOT GAMES

Nuclear Tornado  
Death War  
Whiz-Bang Buddies  
Armor Snake

### NOT SO HOT

Home Wrecker  
Solar Sandwich  
AtomAge Combat  
Blip  
Battling Banana Slugs

### User Profile



Copyright © 1989 Tektronix, Inc. All rights reserved. Mac is a registered trademark of Apple Computer, Inc. The documents in this ad were created by a blind-folded art director with one hand tied behind his back; Adobe Illustrator '88; a Mac II; and a Tektronix 4693DX Color Image Printer.

Circle 143 on reader service card



script from another, you can create extremely sophisticated and truly gargantuan programs. For further fun, you can wire a script to a particular key ahead of time, or design a calculator that can be programmed on the fly.

Once you've finished assembling a calculator, you just Save As to create either a DA or stand-alone application. CCS stores the editable version of the calculator in a third file type of its own.

You can't carry CCS in your pocket, and it doesn't have quite the convenience of a hardware calculator. In every other respect, however, this package is superior: it has better displays, a wider range of calculating functions, more memory, bigger programs—and the clincher, it can make your dream calculator a reality. If applied math is a necessity or a passion for you, Calculator Construction Set belongs in your software collection.

—Steve Cummings

See Where to Buy or circle 710 on reader service card.



### Removable Hard Disk System

## TRAVELLER 40MAC

**Pros:** Hard disk removes easily for transport or security. **Cons:** Separate power supply; additional cable required for SCSI daisy-chaining; no formatting or utility software supplied; expensive additional hard disk systems. **Company:** Aströ Systems.

**Requires:** Mac Plus. **List price:** \$1225; additional TravelPak 40MB disk \$1045; additional TravelPort base unit \$155; power supply \$115.

Removable hard disk systems offer three advantages over fixed hard disks. The first is transportability; you can remove the disk portion and put it in your briefcase, then insert it into a similar base unit at your destination. The second advantage is security; you take out the disk and lock it up for safekeeping. The last advantage is expandability; you can buy more disks for additional storage capacity.

Aströ Systems' Traveller 40Mac comes in three parts: a 40-megabyte hard disk in a plastic shell about the size of a James Michener paperback; a base unit; and a power supply. The TravelPak disk portion slides into the

TravelPort base unit, which receives power and data signals through a connector at the rear of the unit. The power supply is a box the size of your hand, with a line cord and a smaller cord leading to the base unit. The base unit has a power switch and one DB-25 SCSI connector on the back. Almost all other external Macintosh hard disks provide two SCSI connectors, so that you can easily daisy-chain additional SCSI devices. But in order to hook up more SCSI devices to the Traveller 40Mac, you must purchase an optional adapter cable from Aströ. Another annoyance is that when the Traveller is attached to an SE/30, the Mac's internal drive doesn't boot unless the Traveller is switched on. The drive also comes preformatted, loaded with Apple's system software, and preset to SCSI ID 1; there is no way for the user to change the SCSI ID, another unusual "feature."

Although the unit I tested had a 40MB 3½-inch Quantum drive mechanism, there are also 80MB and 100MB versions of the Traveller Mac. The Traveller's speed and performance were good, and the drive ran relatively quietly. The unit doesn't have a cooling fan, but running the Traveller 40Mac for several hours only made the case slightly warm to the touch.

Amazingly, Aströ Systems doesn't include disk-formatting software with the product. The technical support staff at the company told me that software is unnecessary because the hard disk comes preformatted, and that the company doesn't like to give the software out because it is "too easy" for Macintosh owners to destroy all their data with just a few clicks of the mouse. I then asked what I should do if the hard disk becomes corrupted, requir-

ing reformatting. I was told that a dealer could perform the service for me, or that Aströ would send the software upon request. No other software, such as disk utility or backup software, comes with the product. The documentation is poor, with only one page of the thin manual devoted to installation procedures for the Macintosh (although the company states that a new manual is in the works).

### Home from the Office

The Traveller, however, isn't the only solution to the problem of moving data between two locations. Its primary competition is the removable 40MB hard disk cartridge system made by Syquest and marketed by a number of companies. And when compared to the Syquest drives, the Traveller 40Mac falls short in almost every category. The Syquest cartridges are smaller and lighter, yet hold the same amount of data. A Syquest drive with one cartridge sells for as little as \$799, with additional 40MB cartridges costing only \$99. An extra 40MB TravelPak costs \$1045. And should you want to carry a single TravelPak between home and office, a second TravelPort and power supply costs \$270. The total cost for a two-location solution is \$1495 for the Traveller, and \$1598 for two Syquest units. But you get an extra 40MB of storage when you buy the second Syquest drive, so it's clearly a better value. And you have the added bonus of being able to exchange Syquest cartridges with colleagues who also have these popular drives. The TravelPak has an edge in reliability, however; since it contains a sealed hard disk, it's less likely to fail than a Syquest cartridge, which is more susceptible to contamination.

Although the Traveller 40Mac ran well, because of its high cost, hardware annoyances, the missing formatting software, poor documentation, and mediocre support I can't recommend it to people who need to carry their data with them. Buying one of the many available Syquest cartridge drives is a better solution. Or you could even buy one of the smaller 40MB hard disks and put up with the inconvenience of dealing with the power cord and SCSI cables.—Tom Negrino

See Where to Buy or circle 847 on reader service card.



Aströ Systems' Traveller 40Mac

MARK JOHANN



# Data Is Money. Deposit It Here.

## **DATAVault.™** **The 1.3GB DAT Backup** **System From Tecmar.**

The most important and valuable part of your computer system is the data itself. And there's no better place to deposit and protect it than DATAVault.

Here, dependable DAT technology and industry-standard DDS recording combine with a high-performance SCSI interface for the most versatile and reliable backup system yet.

DATAVault is truly an exceptional value. Compatibility with ISA, MCA and Macintosh® computers ensures flexibility regardless of your network

or workstation environment. And media costs are less than 3 cents per megabyte.

Data deposits and withdrawals are

quick and easy with a backup speed of up to 10MB per minute—and file access of 45 seconds across the entire 1.3GB tape. Plus, the software does it all automatically!

DATAVault. Backed by Tecmar's 16 years of quality products and services. And you can take that to the bank. For full details, call 800.624.8560.

**TECMAR**

*Where Good Ideas Go To Work*

All Tecmar products are trademarks or registered trademarks of Tecmar. Other brand and product names are trademarks or registered trademarks of their respective companies.

©Copyright Tecmar, a subsidiary of Rexion, Inc., 1989. All rights reserved.



★  
Plotting and Analysis Program

## KALEIDAGRAPH 2.0

**Pros:** Fast plotting; provides full control of plot symbols, sizes, fonts; page view allows precise placement of plots; can save page layouts as PICT files; includes version that uses floating-point processor for 68020/030 Macs. **Cons:** No option to tile or stack windows. **Company:** Synergy Software. **Requires:** Mac Plus. **List price:** \$249.



When KaleidaGraph first came out over a year ago, its performance and many of its features were better than the best-selling graphing program at that time, Cricket Graph. Now Synergy Software (formerly Peripherals, Computers & Supplies) has made a good thing better with the release of version 2.0.

### Improving on a Good Thing

KaleidaGraph includes line, scatter, and double-y plots, as well as probability, x-y probability, stacked histogram, box, and percentile plots. In addition to the polar, pie, and column plots found in version 1.1, KaleidaGraph now has horizontal bar and stacked bar plots. The line, scatter, double-y, and x-y probability plots can be assigned up to nine x variables.

When you start working with KaleidaGraph, you'll probably be struck by the similarity of its interface to Cricket Graph; when you double-click on an axis, for example, it displays a window with options for changing the tick interval, the format of the numbers, and so on. KaleidaGraph's data display is the now-common spreadsheet window.

Soon, however, you'll realize how different the two programs are. For instance, KaleidaGraph plots data faster than Cricket Graph (4 seconds for 500 points and 10 seconds for 2000 points with KaleidaGraph, versus 11 seconds and 10 minutes, respectively, with Cricket Graph). KaleidaGraph also offers new options for zooming and panning a plot as well as for selecting only certain data for plotting.

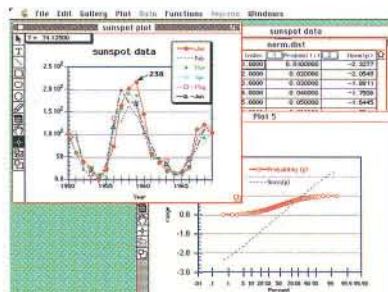
KaleidaGraph has a window that looks just like a regular programmable calculator. You can use this window to perform many types of calculations,

from simple math to exponential and logarithmic operations and vector manipulation. This calculator also enables you to create or modify macros. Macros can be saved in individual files—statistical analysis macros in one file and quality-control analysis macros in another file, for example.

### Data with a Foreign Accent

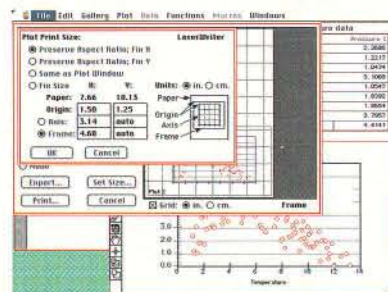
KaleidaGraph has some excellent but complicated options for importing data from text files. The complications arise from KaleidaGraph's flexibility. For instance, you can tell KaleidaGraph to read one header line as the data set title, skip a few lines in the header to get to the line containing the variable names, and then read only certain columns of data into the data set you're creating. You can experiment with the import options until you get the data you want without any frustration.

KaleidaGraph also offers good formatting options for both text and numeric data. The time format in-



### Getting It All on Screen

Two datasets have been plotted in different windows. Spreadsheet views of both sets of data are in the upper-right corner. The sunspot plot is a regular scatter plot of six variables, while the other plot (unlabeled) is a probability plot of two variables from another data set.



### Laying Out the Plots

This dialog box represents all the options for rescaling a plot on the page view prior to printing. One plot has already been sized and placed on the page (look to the lower right of the dialog box).

cludes m/d/yy, d-m-yy, h:mm:ss, and mm:ss.ss. KaleidaGraph also automatically converts fractions like  $34\frac{5}{8}$  to 34.625 for plotting.

### Give Me More Plots

Version 2.0 has removed the restriction of working with only one plot window at a time. Initially, only one plot appears, but you can display other plots by selecting names from a hierarchical menu. There's also a menu item to show all plots.

KaleidaGraph stores separate layout styles for each plot type; you can use different fonts and data symbols and put the legend in a different location for each type of plot.

KaleidaGraph especially shines by letting you manipulate the data in either the plot window or the data window. The data window's masking option allows you to select a specific range of data for plotting. When working in a plot window, you can use either the data-selection tool or the zoom-selection tool for changing plots. The data-selection tool lets you draw a polygon around part of a plot to define that data as the points of interest; KaleidaGraph then generates a new plot using only that data and recalculates any fitted lines for that data alone. The zoom-selection tool lets you select a rectangular region for a smaller-scale plot; KaleidaGraph doesn't recalculate fitted lines for zoom selections.

KaleidaGraph also provides a tool for identifying plotted points. After selecting the Identify icon from the tool palette, you can use the cursor to determine the x and y values of any plotted point. If you hold down the Option key after selecting a point, the program prints a label with the value of that point in a free area of the graph and draws an arrow from that label to the point (see "Getting It All on Screen").

### Final Output

KaleidaGraph provides a page view for specifying sizes, locations, and aspect ratios of each plot. You can resize plots, maintaining either the length of one axis or the ratio of the two axes. Once you are satisfied with the layout, you can either print the page or save it as a PICT file, which is useful if you (continues)





**1987 Macworld  
World Class Award**



**1989 Macworld  
World Class Award**



**1988 Macworld  
World Class Award**

## **Turbo Mouse. Wins again and again and again.**

That's right. For the third year running, the readers of Macworld magazine have voted the Kensington Turbo Mouse® "Best Input Device" for Macintosh® computers.

Who were the contenders? Every other trackball and mouse on the market. (Not to mention joysticks, keyboards and graphics tablets.) The winning secret? Simple.

Turbo Mouse is quicker, quieter, and easier to use. It delivers the winning combination of speed, precision, two buttons

with extra features, and a comfortable, space-saving design—all for just \$169.95.

For a free brochure, or a dealer near you, call (800) 535-4242. Outside the U.S. or in New York, call (212) 475-5200.





want to merge a plot layout into another document. You can also save individual plots as PICT or MacPaint files.

KaleidaGraph has taken steps to produce high-quality output on LaserWriters, especially when reproducing fine lines and small symbols. It has produced some of the best-looking graphs I've seen. KaleidaGraph has also added PostScript information to the comment section of the PICT files so that you can use the plots in other applications—like PageMaker and PowerPoint—that can read the PICT comments.

KaleidaGraph is easy to use even when importing data from other files. Its plotting speed makes it easy to fine-tune the appearance of a plot without frustration. I especially like the page layout and PICT-file options for printing and using plots with other programs. At only \$50 more than Cricket Graph, KaleidaGraph is a much better buy, both in terms of features and performance. The price advantage might not last long, however, as another plotting program, Igor, looks very competitive and costs less (\$195).

—Dave Kosiur

See Where to Buy or circle 780 on reader service card.

## ★ Network Sign-out Board

### IN/OUT 1.0

**Pros:** Easy to use; user-defined shortcuts for posting new notes quickly; doesn't require file server. **Cons:** Workgroups limited to 48 users. **Company:** CE Software. **Requires:** Mac Plus; AppleTalk network; System 6.0.3. **List price:** 5-user pack \$199.95; 10-user pack \$299.95; 50-user pack \$999.95.



Do people pass in and out of your office as if it's Grand Central Station? Are you still trying to figure out where people are and what equipment is available? If so, you should be using In/Out, the first network sign-out board.

In/Out keeps track of people's schedules by letting networked users share a common database of appointments. You can also do such things as check on whether an overhead projector is available, or inform coworkers where you're likely to be for the

next few hours, but it only works when people use it consistently.

#### Setting Up In/Out

In/Out is designed to run in the background or on a Macintosh running AppleShare. You must be running System 6.0.3 or a later System version for In/Out to operate properly. Also, if you install In/Out on an AppleShare server, the server needs a minimum of 2 megabytes of RAM to work as a mail server or printer server or to handle more than 100 In/Out users.

In/Out allows you to define users, resources, and workgroups. You also have the flexibility of specifying a user's full name or using just first or last names. Workgroups can contain up to 48 names; if a workgroup gets larger, you'll need to divide it into two or more smaller groups.

In/Out is available in 5-, 10-, and 50-user packs; each pack has a serial number. When you're installing the In/Out server, the IOS Install program checks these serial numbers to prevent illegal duplication.

In/Out allows administrators to add or delete users and resources, create new workgroups, or change the In/Out server configuration.

#### Coming or Going?

Using In/Out is fairly easy. Like many other network programs, the first time you use it you have to select the network zone and the In/Out server that you want to log on to. The zone server is selected automatically after the initial setup. I encountered some long delays (one to two minutes) logging on with a Mac Plus to an In/Out server across a LocalTalk router; CE Software indicated that this is an abnormally long wait, but I have been unable to isolate the problem.

You can have In/Out automatically notify the server that you're "in" when you turn on the Mac and that you're "out" when you turn off the Mac. Other scheduling has to be done manually.

One nice touch is In/Out's screen saver. You can post a message that you are leaving, and it appears on your Mac as part of In/Out's screen saver; the message simply moves around a darkened screen.

CE Software/OverBoard/Control			
NAME	STATUS	NAME	STATUS
Beecher, Bill	In	Falino, Tony	In
Bracewell	In	Funke, Jolene	In
Brown, Bob	In	Henriksen	In
Brown, Don	In	Kirk, John	In
Cavanagh	In	Kirk, Peggy	In
Cheney, Sc.	In	Kirndall	In
Davis, Bill	In	Knee, Jeff	In
DeYoung, Le.	In	Loverink, Da.	In
Eddie, Miche	In	Loverink, Pa.	In
		Reed, Dave	In
		Reed, Deb	In
		Schrum, Hark	In
		Skate, Dick	In
		Skate, Cindy	In
		Stoner, Steve	In
		Wilson, Kim	In

#### Keeping Track

In/Out's names-only view shows each user's name and whether he or she is in or out.

#### Out the Door in a Flash

The Shortcut dialog window includes a list of user-defined shortcuts for notes that can be generated with a ⌘-key combination. The notes "IN," "OUT," and "Lunch" are standard notes defined by In/Out; "In Production" and "At the printers" are defined by the users for their own standard messages.

The main purpose of In/Out is to inform coworkers of your presence or absence and to check who or what is available in the office. The tracking window, accessed using the In/Out desk accessory, displays full information or just names (see "Keeping Track"). For each user, the Full Information display includes name, return time, a note line, and the date and time that In/Out was last used. The Names Only display presents the names and status (In or Out) of all users in a multiple-column display. The program only displays one workgroup at a time.

In/Out's handy Shortcut dialog box lets you create your own often-used notes and assign them to ⌘-key combinations (see "Out the Door in a Flash"). Thereafter, you select the appropriate keyboard shortcuts and the note's entered.

#### I'm Outta Here

In/Out is a deceptively simple, but useful, network application that allows you to keep track of people and resources within a workgroup with a minimum of fuss.—Dave Kosiur

See Where to Buy or circle 777 on reader service card.



# IF YOU LIKE WHAT THE MACINTOSH™ DID FOR PERSONAL COMPUTING



Now we have 3 easy-to-learn, easy-to-use accounting programs created especially for the Macintosh

## MULTILEDGER™

An integrated accounting program which combines General Ledger, Accounts Payable, Accounts Receivable, and Inventory tracking. Generates checks, customer invoices, customer statements, and a wide variety of financial and management reports. Prints on ImageWriters, LaserWriters, and many other printers.

## PAYROLL

A complete payroll system for organizations with 1 to 1000 employees. Use it as a stand-alone program or integrate it with either of our ledger programs. Calculates both employee and employer taxes and deductions. All state and federal tax tables and parameters are included and all can be modified by the user!

## CASH LEDGER

An "entry-level" General Ledger program for those who don't need payables, receivables, or inventory tracking. Shares many of the same G/L features and advantages of MultiLedger, including check-writing, bank reconciliation, and financial reports. Upgradable to MultiLedger if more features are needed in the future.

### COMMENTS FROM RECENT REVIEWS

"My favorite all-around accounting program is CheckMark Software's MultiLedger/Payroll set. It was the simplest and most logical I examined that provided a reasonably full set of capabilities. Its price/performance ratio represents an excellent bargain."

*Macworld / September 1988*

"MultiLedger is ideal for the small business. It's easy to set up and use and has an amazing set of accounting features when compared to other programs that cost more and don't offer much more power."

*MACazine / March 1989*

"I don't know of any other Mac accounting software which contains so many features and modules for the price."

*Computers in Accounting / January 1989*

"A welcome and impressive bonus is the Payroll program which can be linked to MultiLedger.... MultiLedger and Payroll are a bargain for companies that don't need a networked system."

*MacUser / April 1989*

"Our favorite package was MultiLedger.... it's the most elegant, usable and Mac-like of all the packages we reviewed.... CheckMark offers unlimited free telephone support to all users. This policy would lead to bankruptcy if the program were as confusing as others."

*The Macintosh Buyer's Guide / Spring 1989*

## ...YOU'LL LOVE WHAT WE DID FOR SMALL-BUSINESS ACCOUNTING

Easy. Powerful. If you thought they didn't go together, consider what the Macintosh did to redefine personal computing.

It let users concentrate on what they were trying to achieve or produce, while other systems forced them to focus on the operation of the computer itself. The amazing success of the Macintosh shows that when thinking people are given a choice between simplicity and power, they'll take both!

Those who created the Macintosh realized that it takes more time, more work and more creative thinking to make something simple than it does to make something complicated. Their success has enabled us to create easy-to-use, affordable accounting programs for small and medium-sized businesses of all kinds.

To see if one or more of our programs can work for you, just give us a call. We'll send you a free demo disk of all three programs, reprints of recent reviews and dealer names in your area.

You'll see for yourself just how easy and painless accounting on the Macintosh has become.

**CHECK MARK**  
SOFTWARE INC.

1520 East Mulberry / Suite 200  
Ft. Collins, Colorado 80524

Phone 303-484-3541 FAX 303-484-0429

Full-functioning demo disk available

**1-800-444-9922**

Dealer inquiries welcome

Macintosh, ImageWriter, and LaserWriter are trademarks of Apple Computer, Inc. MultiLedger is a trademark of CheckMark Software, Inc.



★  
Drawing and Visualization Package

## STRATAVISION 3D 1.0.2

**Pros:** Clear user interface; excellent documentation. **Cons:** No surfacing tools; requires lots of memory when manipulating large drawings. **Company:** Strata. **Requires:** Mac II; 2MB RAM; 20MB hard disk; System 6.0.3; 32-bit QuickDraw. 5MB on hard disk recommended. **List price:** \$495.

After upgrading from my old 24-bit color board, I found the new ability to choose millions of colors from the monitor control panel device to be exciting, especially after I got a software package that makes use of 32-bit QuickDraw. It wasn't too long ago that complex photo-realistic imaging was available only to those who could afford a \$150,000 workstation. StrataVision 3D now brings complex imaging to the Macintosh at an affordable price.

**Picture Perfect**

StrataVision 3D begins with a pleasantly simple, yet powerful, user interface. Those familiar with Super 3D or MacDraw will notice many similar drawing tools such as polylines, circles, boxes, and text. You can create 3-D images using these tools, but StrataVision 3D includes tools for creating 3-D primitives such as spheres, cylinders, cones, and cubes, thus relieving you of the task of revolving and extruding a 2-D image.

Although there's a grid for accurate placement of objects, grid spacing units are in pixels and are not as accurate as I expected. StrataVision 3D lets you import images from just about any drawing package. You can import and render PICT and EPS files, but if the images you want to import have the slightest complexity, you'll probably have to import them in sections.

StrataVision 3D allows for both DXF and IGES translation. I imported AutoCAD Release 10 DXF files into StrataVision 3D and all the complex surfaces came through without a problem. StrataVision 3D recognizes the surfaces created in AutoCAD and can render them, but StrataVision 3D should incorporate its own complex

surfacing tools. Unfortunately, when I imported an IGES file from Schlumberger's MacBravo, many of the surfaces were not in the proper place and had to be deleted or moved. IGES-translation problems are due to the lack of proper standardization rules and cannot be blamed on any one software package. A novice CAD user will find StrataVision 3D simple and easy to use. On the other hand, the program gives a trained expert the power to manipulate such intricate parameters as transparency, reflectivity, index of refraction, and so forth.

A 3-D model can have an infinite number of either spot lighting or diffuse lighting sources, each of which can be any color available in Apple's color wheel. You adjust light sources by dragging them around a sphere. Before you can render objects, surface attributes need to be assigned. When assigning attributes to the different objects, my favorite part is the texture mapping. Not only can you color an object and give it a shiny or transparent look, but StrataVision 3D makes surfaces come to life with a set of unique predefined attributes for plastic, wood, and metal.

After manipulating the position and the surface attributes of an object,

**Ray-traced images**

StrataVision 3D allows you to create many different surfaces. Reflective, transparent, and special marble surfaces interact with each other in these ray-traced images.

you use the camera tool to render. Multiple images can be batch-processed and rendered back to back. StrataVision 3D runs well under MultiFinder. I ray-traced a complex object in 32-bit mode while writing this article using the Mac with negligible slowdown. The slowdown becomes more apparent with complex images.

**Track Performance**

Although StrataVision 3D is relatively inexpensive, you have to make a substantial hardware investment to make use of all its wonderful features and be able to view the result. After finding out that 32-bit QuickDraw doesn't work on RasterOps' 24-bit ColorBoard 104, I broke down and paid \$2800 for the upgrade. For \$1000 you can get a board to use with a 13-inch monitor; a 19-inch monitor with a 32-bit color board costs between \$7000 and \$9000.

Though StrataVision 3D runs on a 2MB Mac, you won't be able to use MultiFinder or render and manipulate files quickly and painlessly. The more memory you have, and the faster your hard disk, the better. Even when I put the program on my slower optical disk, the optical disk was accessed through the System Folder on my hard disk. Be sure you have plenty of space on your hard disk for the cache file, since it can grow to be too big before the job is complete. Even on my 8MB Mac IIx, the cache file for a small image was 4MB while ray-tracing. You can view a file as it is being imaged, but there is a speed penalty for doing so.

**Overall Image**

StrataVision 3D accomplishes many feats that less than a year ago were available only through Visual Information's Dimensions package. Although complex surface tools have been left out, you can import AutoCAD Release 10 images. Both complex surfaces and animation are being considered for future StrataVision 3D upgrades. Strata also has three attribute modules that contain decorative stone such as marble and granite; a military camouflage module; and a wood-grain module. If you have all the equipment to take advantage of it, this exceptional package is definitely worth the price.

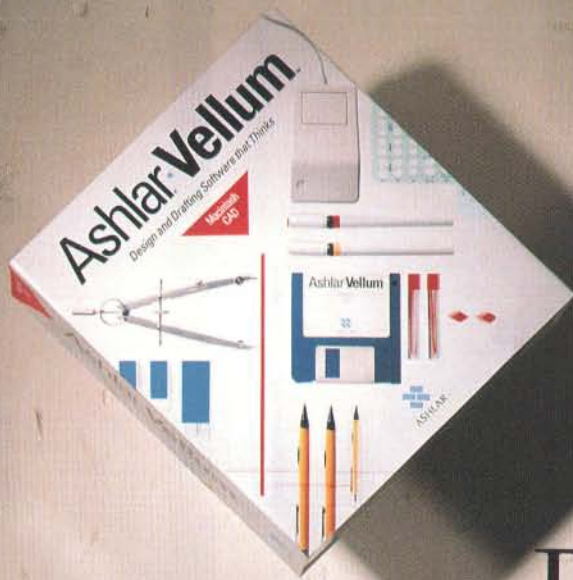
—Victor Elgohary

See Where to Buy or circle 844 on reader service card.





# CAD



# RAD

Introducing software that thinks. There has never been personal computer design and drafting software this powerful, this fast or this intuitive. Vellum thinks. Its radical new technology automatically pinpoints and aligns geometry as you draw. Built-in intelligence allows you to draw virtually freehand, yet set precise dimensions at any time. Finally, the days of complex commands and weeks of training are gone. Vellum has made industrial-strength design click on the Macintosh. For a demonstration see your Ashlar dealer or call (408) 746-3900.



**ASHLAR**  
Software That Thinks™

Circle 472 on reader service card



# WINDOW SHOPPING

by Lawrence Stevens

*This month I look at two tutorials: one for grammar, the other for darkroom work. I also review a utility for recovering deleted files and another for opening documents whose applications are not available.*

## Nuts & HyperBolts 2.0

Nuts & HyperBolts (\$189.95 from Sterling Swift Software) is a HyperCard-based grammar workbook. It provides lessons on parts of speech and parts of sentences, and lessons and practice sessions on agreement, sentence fragments, comma placement, and pronoun reference. The lessons are divided into small portions and displayed on a card. The grammar examples are humorous and interesting, and the explanatory text is clear, often witty, and sprinkled with encouraging phrases (see "Making the Right Choice").

The four practice stacks contain 20 cards each, with five practice sentences or fragments per card. You choose the card you want to work on by clicking on its title—for example, Frankenstein, The Marx Brothers, Quarterback. On each card, you must decide if the sentences or sentence fragments are grammatically correct. If incorrect, you specify—through



mouse clicks, not keystrokes—how to rectify the problem.

If you err on a practice question, Nuts & HyperBolts first displays a card that explains why your answer was wrong. Then the program takes you to the lesson section that covers that topic. You can choose to review the lesson or go back to practice.

Educational software has two potential advantages over its paper counterpart: it can branch into different topics based on a student's response, and it can be more attractive and fun to use. Nuts & HyperBolts excels wonderfully in the first category but falls somewhat short in the second. While the cartoon drawings are fun, there is no sound, and the only movement on each card is the blinking of the screen when a question is answered correctly. Unfortunately, since the scripts are inaccessible, HyperCard-savvy instructors won't be able to add their own frills.

The program is made tamper-proof by having all HyperCard menu and keyboard functions (as well as

the Apple menu) disabled. Users are dependent on on-screen buttons for navigation. These buttons work fine unless you inadvertently move to a wrong section. It would be nice to be able to use HyperCard's Previous command rather than using Nuts & HyperBolts' predetermined route.

I think the lack of control over movement within a stack and the inability to use DAs or to customize cards outweigh the advantage of protecting the stack from tinkering students.

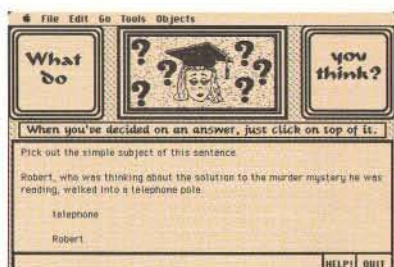
The problems notwithstanding, this is a fine example of computer-aided instruction. It's hard to conceive of a student completing the program without becoming adept in the subject matter.

## MacPhotography Workshop 1.02

MacPhotography Workshop (bundled with MacInTheDark from Joseph Ciaglia Photography for \$79.50 plus \$3.50 shipping) is an ambitious, seven-disk, 4.5MB, non-HyperCard photography tutorial and darkroom assistant.

MacPhotography Workshop is a complete beginner's course in black-and-white camera and darkroom work. The camera section includes topics on lenses, film, light meters, and image control. The darkroom section includes everything you need to know to develop film. Each section begins with a text module that describes the processes in detail, delineates the equipment you need, offers some brand-name recommendations, and includes safety caveats.

The text sections are followed by interactive animated sequences. In some cases, the interactive sequences are relatively helpful. For example, you can click on various combinations of exposure times and paper grades to see how an on-screen image of a print is affected by them. It's less helpful (*continues*)



## Making the Right Choice

While most Nuts & HyperBolts lesson cards expound a grammatical rule, a few offer multiple-choice questions. You select the answer by clicking on it. The selection you make determines the next card, which explains why you were right or wrong.



when, for example, you use a mouse pointer in the shape of a hand to place a negative in an enlarger or convey photographic paper from chemical tray to chemical tray. It's true that practice might reinforce the skills learned in the text. But on-screen mouse movements are only slightly helpful in preparing for the real thing.

MacInTheDark helps you time the sundry processes required to develop film. With MacInTheDark, you create a script that contains all the steps of the process including the time intervals. The program then vocalizes the beginning and end of each step and announces when to agitate the chemicals. Concurrently, the appropriate process description, which you had typed into the script, is displayed on the screen.

This is a beautiful and ingenious program—but given the large number of video tapes and books on photography, I wonder whether a computer is really the best medium for learning about the subject. And unless you have a gray-scale monitor, the Mac does an atrocious job of displaying photographic prints.

These problems are, of course, related to the Mac, not to the software. If you prefer computer-based learning, MacInTheDark is a good choice.

### HandOff 1.1.1

One advantage the Mac System and Finder combination has over other computer systems is that you can access an application by selecting a document created by that application. Unfortunately, if the creator application is absent, this feature won't work. HandOff (\$49.95 from Software Innovations) solves this problem by replacing the Mac's application-is-busy-or-missing dialog box with a dialog box that lets you select the application in which you want the document opened. If the substitute application and document are compatible, they will open. If not, the application opens without a document.

Whenever you open a document with a substitute application, you can specify that HandOff open all subsequent documents that have the same creator with the same substitute application.

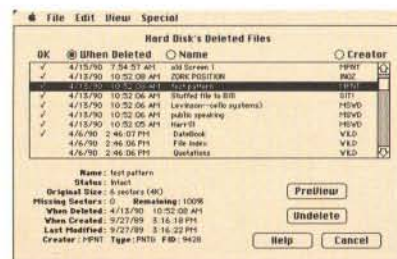
A final feature lets you invent a file-name extension (a period followed by characters) to designate that a particular document should open a particular application. If, for example, Mac users in your company are working with a number of different paint programs, you could all agree to follow each filename with **.PAINT**. Each user then indicates in a HandOff window that whenever a document whose filename ends with **.PAINT** is selected, the paint application is opened even if the document was created by another application.

The only disadvantage of HandOff is that its features don't work if the creator application is available. So if your word processor is Microsoft Word, but you also have MacWrite on your hard disk, any document created by MacWrite will open MacWrite no matter what filename extension you give it.

If your company hasn't standardized on one application in each category and there are a number of file transfers either by disk or network, HandOff can save you a good deal of trouble.

**Complete Undelete 1.0**

Complete Undelete (\$49.95 from 1stAid Software) represents the coming-of-age of file-recovery utilities. It's not that this one is able to recover trashed material any better than its predecessors—the process is an iffy one at best, with its success depending on how much you used the disk after the file was deleted. But the fact that it's a Control Panel device (cdev) instead of an application, along with its superior disk-management and



### Deleted File Log

By selecting any of these deleted files in Complete Undelete, you view (at the bottom left) complete information about the nature and current status of the file. The PreView button lets you see whatever is left of the file's text.

protective features, combine to make this utility more convenient and fool-proof than any other file-recovery utility I have seen.

Complete Undelete creates a Deleted File Log (automatically if you so specify) on every disk that you use. To undelete a file, you access Complete Undelete from the Control Panel and select the volume with the file. The cdev then displays a list of deleted files along with information about each file (see "Deleted File Log").

If you select an undamaged file from the log and select Undelete, the file will be back on the desktop. If the file you've selected is damaged, you can have Complete Undelete try to restore the file in one or both of two methods. Zero-out causes the missing sectors to be replaced with blank spaces. The nature of the missing data determines whether or not the file can be opened. The second method, Extract Text, creates a document that contains what remains of the file's text information. The file can then be opened in any application that reads ASCII.

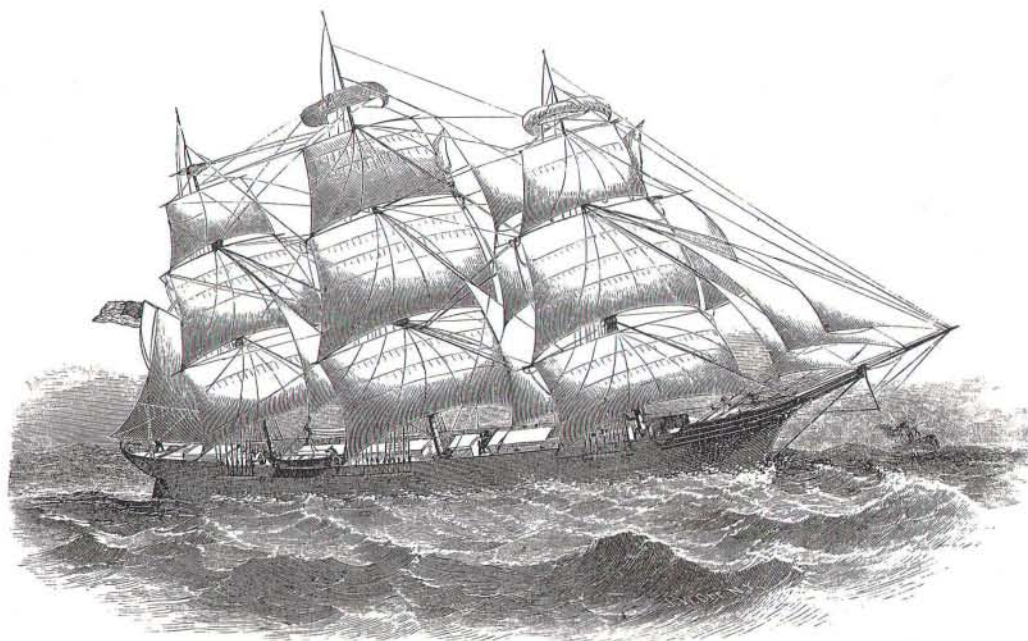
One of the biggest advantages of Complete Undelete is that it is a cdev; you can use it without leaving an application. It enables you to restore files that you deleted using an application's File menu or even, in some cases, to restore previous versions of a document that you lost because you saved a new version.

Complete Undelete will not recover damaged applications because they might corrupt other files, even the System file. The program also displays a warning box advising you not to restore damaged files to the same volume on which you are recovering trash, because of the danger of further corrupting a file.

Unfortunately, Complete Undelete can only recover files that were deleted after Complete Undelete was installed. Too often people buy disaster insurance after they suffered a loss. Complete Undelete is insurance that you pay for only once. If there is any chance that its functions might be needed—and for most of us there is—it is well worth the 50 bucks. **M**

See Where to Buy or circle 808 (Nuts & HyperBolts), 787 (MacPhotography Workshop), 772 (HandOff), 720 (Complete Undelete) on reader service card.





HOW DO YOU UPGRADE A CLASSIC?  
FIND OUT ON APRIL 10TH.

MACDRAFT®

Circle 508 on reader service card



# If you have to ask how much it costs, you're reading the right ad.

There are a lot of hard drives on the market. Each one claiming to be "unequivocally the best." And, most are proud how cheap they are.

All of us want a good deal. And in the next few minutes you'll learn how to truly get the best value without giving up quality and performance.

You may be thinking that this is just more hype from one more company. But, read on. You'll be surprised at what's revealed.

## Hard Drive Makers

All the hard drive brands sold today have a couple of things in common.

First, virtually all these companies do not manufacture their own hard drive. They buy them from the real drive manufacturers. Companies like Seagate, Quantum, Rodime, CDC, Imprimis, Toshiba, Connors, and many others.

Second, they buy a "box" to put the drive into. Now, here's the problem.

## A Short Economics Lesson

Each step of the way, these hard drive "makers" add a mark-up. Profit. Now, we'd be the last to say a company is not entitled to a profit. But here's how you get shafted.

When these companies buy a hard drive. They add a little profit. When they buy boxes. They add a little profit. When they buy cables. They add a little profit. The dealer add his profit. Pretty soon...well you get the picture. Right?

## A Better Way

Here's the trade secret that will allow you to get the drive you want and save money too!

Universal MacProducts, Inc. is

the worldwide leader in one thing. Kits. We make more Macintosh hard drive kits than anyone else. There's a StorMate™ kit for internal installations or for external use.

With our kits, you can take virtually any SCSI hard drive and in minutes be Macintosh compatible.

You save money because you cut out the middle-man. You buy the drive and box. The savings are passed on to you. Install it yourself or let your dealer do it.

## It's The Box

Since all hard drives, regardless of how you buy them, come from the same source. The only variable is the "box." Here's what comes standard with our StorMate kits. Cables, bracket or enclosure cabinet, StorWare™ software and manuals. And something we call **Total Satisfaction**.

**1. Guaranteed Satisfaction.** When you purchase any StorMate kit, you have 30 days to change your mind. If for any reason you're dissatisfied with your purchase, just bring it back.

**2. Box-to-Macintosh Warranty.** For a full two years, your StorMate kit is covered by the best warranty in the business. Should any part become defective, we will repair or replace absolutely without charge to you.

**3. Optional Lifetime Warranty.** As a registered owner, you can purchase extended warranty coverage on

your purchase. In fact, for as long as you own the StorMate product we will repair or replace any defective part at no cost to you!

## The Next Step

See your local Apple reseller. Tell him what drive you want and that you want the StorMate kit. Have him give you a price. Then compare to all the hoopla from those other companies. You'll be convinced.

## Need Help?

For \$7.00, we'll send you our **BYOM (Build Your Own Macintosh)** disk. This disk "walks" you through the hard drive buying business. Step-by-step. It even prints a quote that you can take to your local



dealer. And, of course we guarantee that it's more than worth the seven bucks. If you don't agree, we'll give you double your money back!

*StorMate. From now on, you won't have to take it anymore.*

**Universal MacProducts, Inc.**  
23402 South Pointe  
Laguna Hills, CA 92653-1512  
Telephone (714) 581-3442





# Don't Be A One-Mac Band.

The largest group of Mac® users in the world shares its problems and solutions online every day in CompuServe's Mac Forums. And you can join them.

Find out which Mac software lives up to its claims, which hard drive is best for your applications, how to use the new and exciting HyperCard.™ Get support from Mac software authors and hardware vendors.

Struggling with a complicated desktop publishing program? Ask someone who's been through it all. Can't make your word processing software work with

PixelPaint? Visit a CompuServe Mac Forum and get the answers. There's no better way to get more out of your Mac.

To join CompuServe, see your computer dealer. To order direct or for more information, call 800 848-8199. If you're already a member, type GO MACINTOSH at any ! prompt.

Circle 319 on reader service card

## CompuServe®

COME VISIT OUR BOOTH AT THE MACWORLD IN MOSCONE CENTER, BOOTH 1925





RODIME  
SYSTEMS

# Rodime Introduces the Standard for Hard Disk Technology.

**COBRA™ DRIVES SET THE STANDARD.** Cobra™ high performance internal and external hard drives are the finest drives available for your Mac. With capacities of 45MB, 70MB, 100MB, and 210MB, Cobra is the answer to all your storage needs. External Cobra drives come in a new, sleek low profile cabinet that fits neatly beneath your Mac Plus, Mac SE or Mac SE/30. Internal Cobra drives come with three mounting brackets. One for installation in the Mac II, Mac IIx, Mac SE or Mac SE/30, one for mounting in the Mac IIcx and one for a Mac SE which allows you to keep both floppy ports active.

**FAST 18ms ACCESS TIME.** Nothing is faster! With an average access time of 18ms Cobra is the fastest drive available on the market for the Macintosh line of computers. Cobra drives also come with up to 48K Caching Buffer which allows even faster access to your data by storing frequently used data in "instant access" RAM.

**CONVENIENT SINGLE POWER SOURCE.** With the external Cobra, the flip of one switch on the drive activates your CPU, printer and other peripherals, eliminating cumbersome cables.

**LED'S THAT PUT YOU IN CONTROL.** Now you can be aware of the status of the drive at all times, with power-on, fault status indicator and drive activity lights.

**ONE YEAR WARRANTY.** Rodime Systems offers the level of reliability, innovation and support only an original equipment manufacturer can provide.

**FREE BACK-UP AND UTILITY SOFTWARE.** Cobra drives come with a FREE copy of FASTBACK™ back-up software as well as Rodime's Utility Software which allows partitioning (including A/UX), media verification, formatting and driver installation.

**RODIME'S COMMITMENT TO QUALITY.** At Rodime Systems, the craftsmanship built into every drive is our commitment to produce the finest, most reliable drives available. When you buy a Rodime Systems product, you are buying years of manufacturing experience, state of the art engineering and peace of mind that comes from knowing that more Mac users have chosen Rodime drives than any other.

Rodime Systems 901 Broken Sound Pkwy.  
Boca Raton, FL 33487 407-994-5585  
UK, Nasmyth Rd., Southfield Industrial Estates  
Glenrothes, KY6 2SD, Fife, Scotland 592-774-704  
France, Parc d'Affaires de Jouy-en-Josas  
5bis Rue du Petit Robinson, 78350 Jouy-en-Josas, 1-34-659798

Fastback is a trademark of Fifth Generation Systems, Inc.,  
Macintosh, Mac Plus, Mac SE, Mac SE/30, Mac II, Mac IIx, Mac IIcx and A/UX are trademarks of  
Apple Computer, Inc., Cobra is a trademark of Rodime Systems.





# NEW PRODUCTS

Edited by Mary Margaret Lewis

This section covers Macintosh products formally announced but not yet evaluated by Macworld. All prices are suggested retail. Please call vendors for information on availability.

## HARDWARE

### 2400XF Modem

Menu-driven fax modem that can send to any Group II facsimile machine. Can be programmed to send one or several pages from a document containing text or graphics at predetermined times to multiple fax numbers. Measures 5½ x 4¼ x 1½ inches. Micro Electronic Technologies, 508/435-9057.

### Chinon DS-2000 and DS-3000 Macintosh Scanners

Desktop scanner with SCSI power adapter and cable, utility software, scanner cable, and AC adapter. 200 dpi version \$695. 300 dpi version \$895. Chinon, 213/533-0274.



Colormate PS

### Colormate PS

Color PostScript printer with 8MB of RAM and a Motorola 68020-based Adobe PostScript interpreter that provides 35 resident fonts. \$9995. NEC, 415/961-4400.

### ColorSnap-32

Color capture board that captures 24-bit images from the Canon Xap Shot and other Canon still video cameras, as well as from other NTSC composite video sources such as video cameras, video recorders, and monitors. \$1595. Computer Friends, 503/626-2291.



DataVault

### DataVault

A 4mm, 1.3GB tape drive that supports the digital data storage (DDS) format. Has ten times the search speed of an 8mm tape, and stores data at 11MB per minute. \$4995. Tecmar, 216/349-0600.

### Ether2

NuBus board for the Macintosh II family that supports both thick- and thin-wire

Ethernet and comes with management software. \$395. Compatible Systems, 303/444-9532.



GridMaster

### GridMaster

Digitizer tablet designed as a flexible mat that may be rolled up like a poster. Can be used with all graphics applications. Has a resolution of 1000 lines per inch. Includes side-switch pen stylus or four-button mouse. Weighs 4 ounces. With four-button mouse \$469, with stylus \$449. Numonics, 215/362-2766.



Kodak Diconix M150

### Kodak Diconix M150

Portable ink-jet printer designed to fit in a briefcase or the Macintosh Portable carrying case with the Mac Portable. Produces letter-quality output on plain paper. Is Adobe-type-font compatible and battery operated. \$699. Kodak, 800/255-3434.

### LaserBank 600 R

Rewritable optical-disk sys-

tem for the Macintosh that uses 600MB laser disks for data storage and retrieval. System includes backup and archival backup utility that enables you to back up entire contents of disk or specific files only. \$6995. Micro Design International, 407/677-8333.



LFR Plus

### LFR Plus

Desktop film recorder that provides color sweeps to images that have finely shaded backgrounds and sharp detail. Produces more than 30 slides per hour. \$13,750. Lasergraphics, 714/727-2651.



MacPoint

### MacPoint

Alternative input device for the Macintosh Portable that performs function of keyboard and numeric keypad. Can be used with a stylus or a finger. Snaps into the keypad of the Mac Portable. \$299. Interlink Electronics, 805/684-2100.

(continues)



**Nanao FlexScan Model 9400**

Monitor that supports 24-bit color. Capable of resolutions up to 1024 by 768 on a Macintosh II when used with graphics boards such as Radius's Direct-Color/24 or RasterOps' ColorBoard 108. \$3799. Nanao USA, 213/325-5202.

**Nanao FlexScan Model 9400****QuickCAD**

Graphics display system for Mac II family that consists of single-slot, plug-in NuBus board and proprietary software. Uses VLSI technology

and is capable of computing six million instructions per second. \$1495. Radius, 408/434-1010.

**The Remote Mouse****The Remote Mouse**

Hand-held remote-control input device installed on the ADB port of the Mac. Bundled software utility provides mouse control and labeled keypad enables you to point, click, drag, and select. \$395. Forte Communications, 408/733-5100.

**RGB VideoLink 600AX**

Scan converter for transforming computer graphics to video for the Mac II. \$11,995. VGA and Mac II

**RGB VideoLink 600AX**

cables \$135. RGB Spectrum, 415/848-0180.

**Silentwriter2 290**

An 8-ppm, 300-dpi PostScript laser printer. Includes 2MB of RAM and is expandable to 4MB. Contains built-in controller comprising 16.7 MHz M68000 CPU, Adobe PostScript interpreter, and 35 resident scalable typefaces. \$4495. Adobe, 415/961-4400.

**Smartmodem 2400M**

Internal modem for the Mac II family that incorporates CCITT V.42 bis, V.42, and X.32 standards. Provides point-to-point error-control

throughput to 9600 bps, and connections to packet-switched networks. \$699. Hayes, 404/449-8791.

**Super Digitizer 510C Tablet****Super Digitizer 510C Tablet**

Pressure-sensitive, cordless digitizing tablet that can be used with pressure-sensitive stylus pen. Has 6-by-9-inch reading and drawing surface and weighs 1.9 pounds. \$495 including stylus. Wacom, 201/265-4226.

**ViewFrame RGB**

Color LCD-projection panel that allows you to project computer-generated presentations in color with a

# With the HP DeskWriter, you can

**The Paradise Times**  
VOL. III SPRING, 1990 WANDERING TOURS LTD.

For the traveler craving the tropical essence of the Yucatan as well as a dash of the good life, Akumal is the place. It's not the luxury class of Cancun, but it beats the pants off most other small resorts along the coast.

Akumal prides herself on the conspicuous absence of telephones, TVs or bustling activity.

Folks, this town is laid back. It offers a good selection of hotels, dining and activities to soothe frazzled city nerves.

A large barrier reef runs parallel to the Quintana Roo coast, protecting the lagoon from the open sea. Basically it creates a gigantic underwater playground, chock-full of Caribbean underwater goodies which attract divers from all over the world.

For the archaeology buffs out there, Akumal is 15 km from Tulum. For the rest of us that means it's close to one of the few walled Mayan ruins. Xelha is another 5 km, and even the amateurs among us will want to dip into masks, snorkels and fins to check out this natural underwater aquarium.

In Mayan lingo, Akumal means "Place of the Turtle" not because it's so laid back, but because giant green turtles have come ashore since the dinosaur days to lay their eggs in the warm sands of the Caribbean.

Surrounding Akumal are lush jungles and thick coconut groves. Bright red bromeliads bloom high in the trees during early spring sustaining themselves on rain, dew and humidity. While checking out bromeliads, you will probably see its cousin, the orchid.

Along the porous sand of the Akumal beaches, you'll find lots of really neat stuff: conch shells, lacy red seaweed, coconuts sprouted after soaking in the sea for months, and crabs of all sizes and colors.

**This month's featured destination:**  
**Akumal**

Relax amidst the long stretches of wind bent coconut trees which set off the blazing white sands of Akumal's sweeping beaches.



transmissive overhead projector. Allows simultaneous viewing of local monitor and projected image. \$3995. nView Corporation, 804/873-1354.

## SOFTWARE

### Auto-Architect

Software to be used with Auto-CAD for architects, architectural engineers, facility managers, space planners, and construction professionals. Provides tools for design, input, and editing in plan, elevation, and 3-D. 5MB min. memory. \$1995. D.C.A. Engineering Software, 603/428-3199.

### Bird Brain

Expandable database designed to help bird-watchers keep track of their sightings. Contains reference database of common and scientific names and taxo-

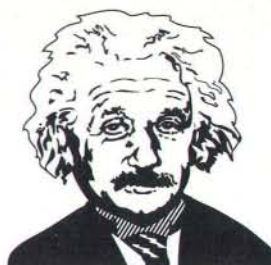
nomie order of North American birds. Also contains page references for each bird in major field guides. 1MB min. memory. \$125. Ideaform, 515/472-7256.

### Blackjack Tutor

Program for creating, testing, and teaching blackjack gambling strategies. Show Stats feature helps you determine success of various blackjack strategies. Uses running card counts and makes suggestions for bets. 512KE min. memory. \$24.95 plus \$2.50 s/h. Post Meridian Software, 612/733-7697.

### Clipables

Collection of PostScript clip art, 17 disks containing more than 600 illustrations in such categories as sports, humor, holidays, animals, and maps. Compatible with any program that accepts



### Clipables

EPS graphics. 1MB min. memory. \$149.95. C.A.R., 314/721-6305.

### Cost Management System

Project-management software with features for cost estimating, job costing, cost variance reporting, and general ledger file export. Has more than 20 management reports. 1MB min. memory. \$495. Softouch Software, 503/241-1841.

### Docket Time

Software for law offices that enables you to calculate legal deadlines, create

docket slips, and print docket calendars for each lawyer working in a firm. Program automatically accounts for weekends, legal holidays, and service by mail. 1MB min. memory. \$249. Professional Software Designs, 602/841-4220.

### Flash

Mac-to-Mac information-exchange software that operates in the background on Macintosh network. Groups data being sent or received into folders. Compatible with MultiFinder. 1MB min. memory. \$199.95. Beagle Bros., 619/452-5500.

### FlexiGraphs

Software that uses graphs as interactive devices for the input and manipulation of numerical data. Derives numeric values from line, bar, or pie charts drawn (*continues*)

# have it all. (But keep it to yourself.)



## The HP DeskWriter printer puts laser-quality printing right at your fingertips.

With a small size and a \$1,195\* price tag, the DeskWriter printer easily fits on your desk and in your budget. And its advanced 300 dpi inkjet technology lets you print sparkling text and detailed graphics.

The DeskWriter is also designed for easy use with your Macintosh, and even includes scalable and outline fonts. Combine that with the DeskWriter's whisper-quiet operation, and keeping it to yourself will be that much easier. So call 1-800-752-0900, Ext. 1004 for your authorized HP dealer.

There is a better way.  
Circle 343 on reader service card



**HEWLETT  
PACKARD**

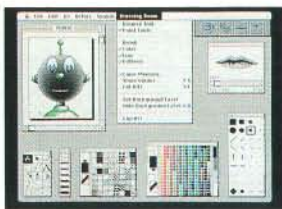




freehand by user. 1MB min. memory. \$179. Tree Star, 805/682-4096.

### How To Use Microsoft Word, Macintosh Version 4

Self-paced audiotape and software course that teaches user to create, edit, merge, and print documents created in Microsoft Word. Also explains changes in Word's menus, spelling checker, and indexing structure. 1MB min. memory. \$99. FlipTrack Learning Systems, 312/790-1117.



interFACE

### interFACE

Software that lets the user

create *talking agents* within the Macintosh interface. Extends the concept of HyperAnimator with improved digitized-sound-synchronizing utility, compressed sound capabilities that are compatible with Farallon's MacRecorder, and speed improvements. Has import-export facilities and imports color into HyperCard. 2MB min. memory. \$499.95. Bright Star Technology, 206/451-3697.

### LetterWorks

Disk-and-book package containing 400 sample business letters. Documents are in ASCII text format and are compatible with most major Mac word processors. Letters are annotated with suggestions for appropriate use. 1MB min. memory. \$79.95 plus \$4.95 s/h. Round Lake Publishing, 203/438-5255.

### Mac CGM Converter

Software converts ANSI or ISO graphic files created on an IBM PC or compatible, PS/2, workstation, mainframe, or minicomputer to Mac PICT or PICT2 format. 512K min. memory. \$150. Pixelix, P.O. Box 158, Cohuna, VC, 3568 Australia.



MacCivil

### MacCivil

Civil-engineering and site-design program that operates inside AutoCAD. Provides range of coordinate-geometry, topographic, and civil-engineering design applications that address all aspects of site development. 5MB min. memory. \$1995.

D.C.A. Engineering Software, 603/428-3199.

### Mail Rater

HyperCard reference program that includes database containing 600 United States Postal Service zone charts; rate regulations for first class, priority, third class, fourth class, and express mail; and information on special services such as return receipt and insurance. 1MB min. memory. \$49.95. Tight Line Software, 714/367-0007.

### MindLink

Problem-solving software helps you link ideas and brainstorm within a problem-solving environment. 1MB min. memory. \$499. MindLink, 802/457-2025.

### Moby Hyphenator

Software listing over 150,000 English words with

# With the HP ScanJet Plus, you've

## The HP ScanJet Plus scanner provides 8-bit photographic-quality scanning.

That means 256 shades of gray for the hottest-looking output from your Mac. And it's so easy, too. At the click of a mouse, you can get negative or mirror images, as well as scaling in 1% increments from 4-200%. All for \$2,190,\* about what you would expect to pay for a 4-bit scanner.

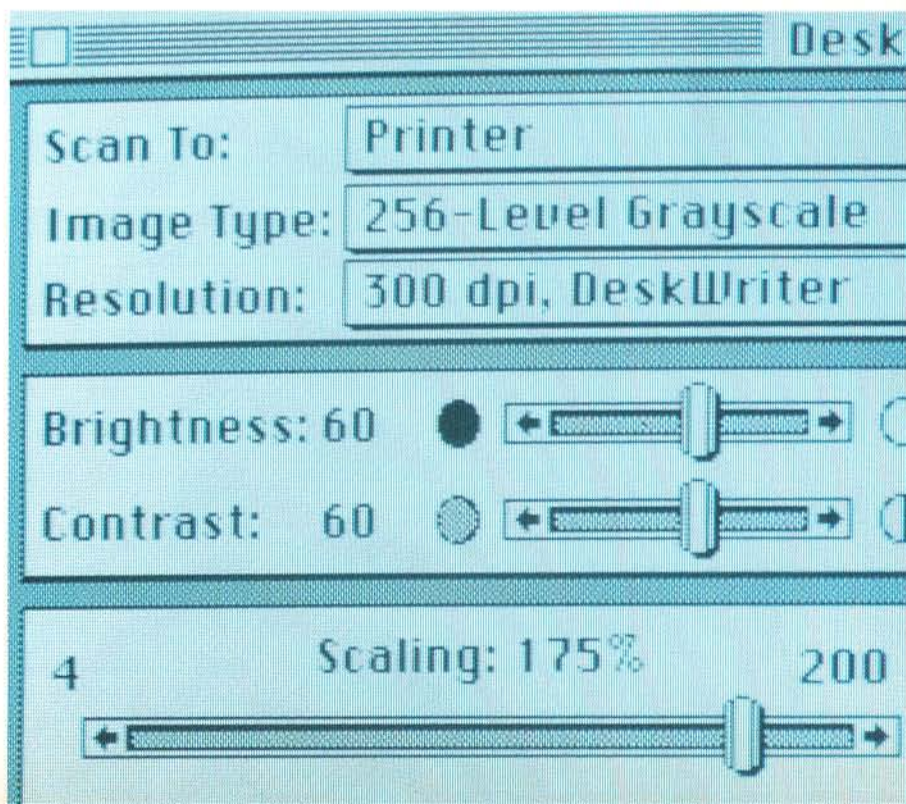
So if you want the richest, most detailed images from your Mac, you've got it made with Hewlett-Packard. Call 1-800-752-0900, Ext. 1005 for your authorized HP dealer.

There is a better way.



HEWLETT  
PACKARD

Circle 344 on reader service card

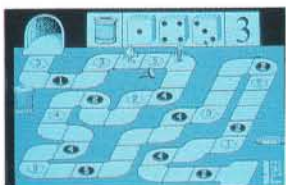




hyphenation and syllabification. 1MB min. memory. \$129. Illumind Unabridged, 408/373-1491.

### Pipe Dream

Spatial strategy game in which you build the longest possible continuous pipeline (from various shapes of pipe), while racing against a moving stream of chemical fluid called flooz. 1MB min. memory. \$39.95. LucasFilm Games, 415/662-1966.



**The Playroom**

### The Playroom

Program built around the theme of child's playroom filled with games, toys, and

surprises. Includes seven games that introduce children to essential skills, including early math, reading readiness, telling time, beginning typing, art, creativity, and logical thinking skills. 1MB min. memory. \$119.95. Brøderbund Software, 415/492-3299.

### PosterWorks

Poster-production software that prints color images up to 100 square feet on any PostScript device. Program creates halftones, color prints, or color separations. 1MB min. memory. \$167. S.H. Pierce & Company, 617/395-8350.

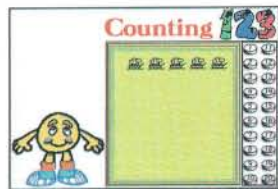
### Precision

CADD package in 2 1/2-D that combines CAD and drawing features. Includes global symbols, built-in IGES and DXF translators. Variable text feature lets you define



**Precision**

a symbol according to its context. Supports PICT file format. 2MB min. memory. \$295. Innovative Systems, 413/737-3993.



**Preschool Pack**

### Preschool Pack

Software teaches children the alphabet and numbers using color, animation, and graphics. Lessons include AlphaWorks; Bar Math;

Concentration; Connect the Dots; Counting 1,2,3; and ShapeWorks. 1MB min. memory. \$69.65. Nordic Software, 402/466-6502.

### PS View

PostScript compatible programming and imaging environment that enables you to view PostScript graphics files on screen before printing. 1MB min. memory. \$499. ImageSoft, 516/767-2233.

### QuickLock

Security software that password-protects desktop access, provides F-key access, and includes a time-out locking mechanism. Remains active when the machine is restarted and acts as a screen saver. 1MB min. memory. \$99.95. Kent Marsh Ltd., 713/623-8618, 800/325-3587.

(continues)

# got it made in the shades.







# The First Color/Gray-Scale Scanner For Under \$2700!



Microtek presents the MSF-300Z. The one scanner that can do it all: color, gray-scale, drawings and text. All for a price that until now, could barely buy you gray-scale capabilities.

Hard to believe, but it's true. You can scan vivid color images into your computer for desktop publishing, presentation graphics or pre-press work. A full 16.8 million colors at a time.

If you don't have a color application yet, this unique scanner captures gray-scale as well as black and white. So you can start working today.

Images can be scanned in 256 gray-scale mode and then retouched, scaled or rotated. And printed on a laser printer or phototypesetter with outstanding results.

Charts and drawings are quickly scanned in single bit-per-

pixel mode then imported into your favorite publishing or word processing program. You can even bring words into your computer without retyping by adding OCR software.

The Microtek Color/Gray scanner also comes with sophisticated color, gray-scale and black and white image editing software. Making it an even more outstanding value.

If you need a scanner for your IBM PC, PS/2, or Macintosh, you need Microtek's MSF-300Z Color/Gray scanner. Call (800) 654-4160 or in California (213) 321-2121 today to find your nearest Microtek dealer. After all, at this price, you can hardly afford not to.



The MSF-300Z Color/Gray scanner is just one member of a whole family of innovative scanners available from Microtek.



★★★★★  
FIVE STAR AWARD  
Publish! 1990



**MICROTEK**  
Better Images Through Innovation.

•Microtek Lab, Inc., 680 Knox Street, Torrance, CA 90502, (213) 321-2121 (800) 654-4160 •Microtek International Inc., No. 6 Industry East Road 3, Science-Based Industrial Park, Hsinchu Taiwan 30077, R.O.C., 886-35-772155  
•Microtek Electronics Europe, GmbH, Grafenberger Allee 277, Stapelmann-Haus, 4000 Düsseldorf 1, F.R. Germany, 49-211-6790051 •© 1989 Microtek Lab, Inc. All rights reserved. Macintosh is a trademark of Apple Computer, Inc. IBM, XT, AT and PS/2 are trademarks of International Business Machines Corporation. All other trademarks or registered trademarks are the property of their respective holders.

Circle 427 on reader service card





# Best Performer!



## *FoxBASE+/Mac: The Most Celebrated Mac DBMS Now Includes a Powerful Report Writer!*

**New  
Version 2.00!**

New FoxBASE+/Mac Version 2.00 is here—and stealing the show! In its first year, FoxBASE+/Mac won more awards—both in the U.S. and Europe—than any other DBMS ever created for the Macintosh! And Version 2.00 is faster and more powerful than ever—packed with innovative new features and language enhancements!

### *New FoxReport!*

FoxReport lets you create virtually any columnar or free-form report—without *any* programming! FoxReport includes:

- **Page Layout:** Designate many layout settings for your report: number of columns, left margin setting, column width, space between columns, measurement size for each page, and more!
- **Report Layout Window:** Define the different areas within your report, using FoxReport's new "band" system. Start with the default bands: Page Header, Body, and Page

Footer, then bring in other bands like Title, Summary, Column Headers and Footers, etc.

- **Object Menu:** Control the Type Font, Sizes and Styles of text objects. Fill and Pen options let you change the color and shading of almost every object!

- **Page Preview:** "What-You-See-Is-What-You-Get" design ensures that the report on your screen is *exactly* as it will appear in print!

- **Label Generator:** Create labels of almost any size and configuration. You can even include pictures *anywhere* on the label space!

### *New Features!*

- **Enhanced XCMD/XFCN Support:** Load up to 16 external XCMD's and XFCN's, then access them directly from within FoxBASE+/Mac 2.00 programs!

- **Language Enhancements:** Other features include: support for custom hierarchical menus, new commands to help handle resources, new system functions to improve filename and screen management, and much more!

### *Perfect Connectivity!*

FoxBASE+/Mac 2.00's Multi-User version allows complete data and application sharing between networked Macs and PCs! (when used with FoxBASE+/LAN). It also runs on the most popular network systems: AppleShare, Novell and 3Com! . . . *And It's Faster Than Ever!*

### *Order or Upgrade Now!*

FoxBASE+/Mac Version 2.00 is the *new* Leader of the Mac! And at only \$495 (\$695 for Multi-User), it's a phenomenal bargain! If you're already a FoxBASE+/Mac registered user, you can upgrade to Version 2.00 for just \$75!

To order your copy (or ask for a *FREE* demo disk), call (419) 874-0162. Or visit your local quality software dealer.

After all, when it comes to the Macintosh, *Nothing Runs Like a Fox!*

FoxBASE, FoxBASE+/Mac, and FoxReport are trademarks of Fox Software. Macintosh is a trademark of Apple Computer, Inc.

## **Fox Software**

Fox Software, Inc. (419) 874-0162, Ext. 650  
134 W. South Boundary Fax: (419) 874-8678  
Perrysburg, OH 43551 Telex: 6503040827 Fox

Circle 152 on reader service card



**Research Assistant**

Software designed to teach students how to use a library effectively. Program divides the research process into a series of steps from initial stages of research to recording citations. 1MB min. memory. \$150. Upper Broadway Bodega, 203/647-8104.

**Sands of Fire**

World War II tank simulation that is designed to re-create the atmosphere of a small tank unit engaged in warfare in the North African desert. User can fight battles as either a British or American commander in any of six different theaters. 1MB min. memory. \$49.94. Electronic Arts, 415/571-7171, ext. 379.

**SecureInit**

Program that lets you set a password to start a hard

disk; enables you to lock application and System files, enables you to refresh System files. Also lets you hide System Folder, lock disk after use, verify all or selected applications, close all windows at start-up; lets you protect hard disks from being launched by invalid user name. Has automatic file purge, erases empty folders, ejects System disks, and protects configuration with a password. 512K min. memory. \$99.95; educational and site license discount available. Direct Software, 415/347-1590.

**Space Rogue**

Space-flight simulation game that takes place in a universe of three-dimensional outposts, mining stations, planets, asteroids, stars, and starships. Players get to execute loops, rolls, and spins, and experience

the tug of gravity while moving past stars. 512KE min. memory. \$49.95. Origin, 603/644-3360.



**StrataVision Surface Attribute Libraries**

**StrataVision Surface Attribute Libraries**

A series of three surface-attribute libraries that is designed for use with StrataVision three-dimensional rendering package. Predefined images are photo-realistic and come in decorative stone, military camouflage, and wood grain. Surface images are 32-bit color. 2MB min. memory. \$139 per library. Strata, 801/628-5218.



**TaskMaker**

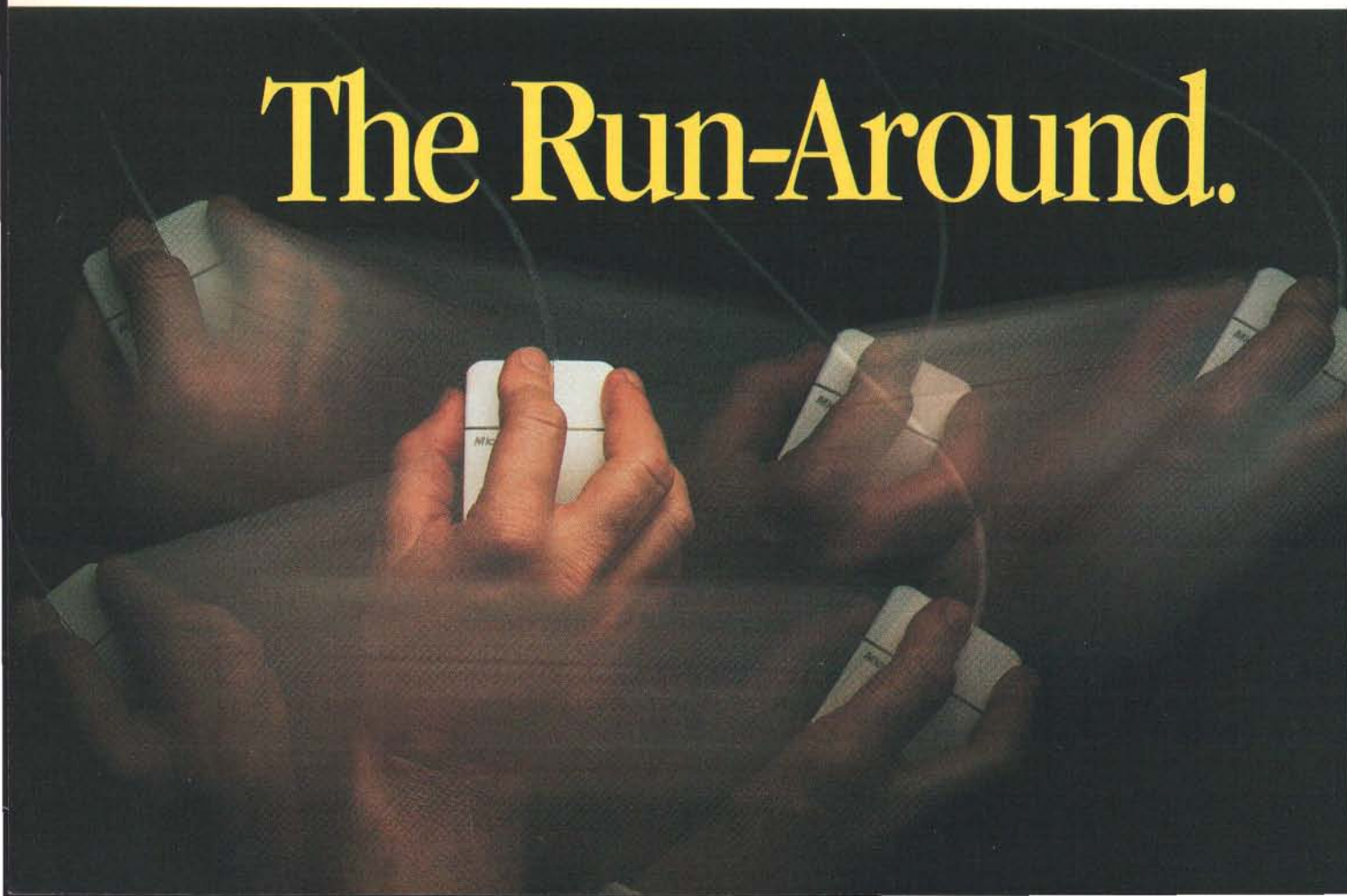
**TaskMaker**

The goal in this graphic adventure game is to complete ten tasks assigned by TaskMaker to restore order and prosperity to a devastated kingdom. In the process user fights monsters, searches out trap doors and dark pits, discovers jewels, and explores secret passages. 1MB min. memory. \$49.95. Xor, 612/831-0444.

**Ticklers**

Game composed of 30 original limericks, each of which has been formed into a puzzle. Player's challenge is to put together informa-

# The Run-Around.





tion gathered from clues in order to solve the puzzle and discover the limerick. Graphical menu. 512K min. memory. \$34.95. MBI Software, 213/479-6790.

## ACCESSORIES

### 12-Volt DC Power Adapter

Power adapter for the Mac Portable that charges internal battery from any 12-volt DC power source, such as an automobile or boat. \$69.95. Lind Electronic Design, 612/927-6303.



External Battery Charger

### External Battery Charger

Battery charger for the Mac Portable that will also

charge any 12-volt DC power source or the spare battery of an automobile. \$99.95. Lind Electronic Design, 612/927-6303.



Macnifier

### Macnifier

Magnifying screen with glare protection. Has adjustable magnification of up to 130 percent, making a 10-point font appear to be 14 points, for instance. \$129.95. Premtech, 404/662-1533, 800/445-5737.

## BOOKS & VIDEOS

### The Complete Directory of Public Domain and Shareware Software for the Apple Macintosh

Directory with more than 10,000 different titles for Macintosh public domain software and shareware. Titles described in directory are available from Budgetbytes for \$5.99 per disk. \$2. Budgetbytes, 913/266-2200, 800/356-3551.

### Macintosh Hypermedia

Reference guide that is dedicated to Hypermedia on the Macintosh. Includes history and underlying concepts of hypermedia, its uses and applications, and its social implications, including issues that involve privacy, copyright, private versus public publishing, and intellectual property. \$17.97. Scott Foresman Mac-

intosh Computer Books, 708/729-3000.

### The Ventura Publisher Solutions Book: Recipes for Advanced Results

Step-by-step guide for intermediate and advanced Ventura Publisher users takes a cookbook approach by providing solutions and tips in recipe format. Covers Ventura Publisher 2.0 and Professional Extension. \$24.95. International Typeface Collection, 212/371-0699. 

*To have your product considered for inclusion in New Products, send an announcement with product name, description, minimum memory, peripherals required, pricing, company name, phone number (and two copies of software) to New Products Editor, Macworld, 501 Second St., San Francisco, CA 94107. We reserve the right to edit submissions.*

# To The Point.

## Introducing the UnMouse™

Quit mousing around and get to the point with The UnMouse. It does everything a mouse can — only faster and in less space. To move the cursor, simply touch the glass. To make a selection, merely press.

Mice run off their pads. Hog your desk. And have to be found, oriented and dragged. But The UnMouse is always stationary. And always faster. With its Absolute mode, one million touch points map exactly to the screen. Just touch a point and instantly the cursor goes to the same location.

Plus The UnMouse has additional features a mouse can't touch. Its Power Keypad provides up to 60 function keys and macros per application. And with its drawing stylus, it even serves as a small, yet powerful graphics tablet. For more information and your nearest dealer:

**CALL 1-800-UNMOUSE.**

	Absolute Control	Function Keys	High Accuracy	Traces	Draws	Screen Space	Key Multiple windows	Key Moving Parts	No Clicking
Mouse									
Trackball									
UnMouse	•	•	•	•	•	•	•	•	•

## MicroTouch

Dealers circle 426 on reader service card  
End Users circle 449 on reader service card

55 Jonspin Road /Wilmington, MA 01887  
508 694 9900 /FAX 508 694 9980

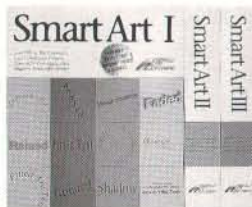


# The less time you spend creating effects like these, the better.

Now you can add new zip to any document—or try out special effects in a flash—with Smart Art.™ Each volume in the Smart Art library contains fifteen effects, so your text can cast a long shadow or wrap around a circle in seconds. Smart Art effects save a lot of time because they're ready to use in virtually any application. Yet it's easy to customize these pre-built libraries of graphic and type effects by changing the font, size, shading and much more.

How does it work? Smart Art is a desk accessory that cleverly uses the PostScript® in your laser printer to create special text, 2D and 3D

effects on your Macintosh® screen. Once you're satisfied with the effect you've made, paste it into your drawing, word processing or desktop publishing program and output it with any Adobe® PostScript printer or other device. Of course, Smart Art works with any PostScript font, too.



The less money you spend creating effects like these, the better, too. That's why Smart Art's suggested retail price is only \$149.95 a volume. New volumes are also available, so if you don't see the effect you need, call Emerald City Software at 1-800-223-0417, in CA 415-324-8080.

*Slanted*

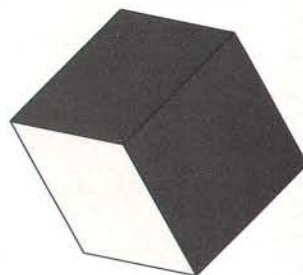
Half Circle Text

*Angled*

**Raised**

**Drop Shadow**

**BANDED**



**Neon**

**Faded**

**Split Reverse**



Smart Art is a trademark and Emerald City Software is a registered trademark of Emerald City Software. Adobe and PostScript are registered trademarks of Adobe Systems Incorporated. Macintosh is a registered trademark of Apple Computer, Inc. © 1990 Emerald City Software. All rights reserved.

Dealers circle 18 on reader service card

End users circle 212 on reader service card



# Quick Tips

BEST IMAGEWRITER QUALITY, KEYBOARD-CONNECTOR LIFE, QUITTING THE FINDER, AND MORE

# H

BY LON POOLE

ow do you feel when you insert a floppy disk containing a week's work and the Mac responds with "This is not a Macintosh disk: Do you want to initialize it?" A little tight in the pit of your stomach? Disks do wear out and drives drift out of

alignment, as I explained last December. Russell K. Hobbie of Saint Paul, Minnesota, can sometimes get a marginal disk to work by reinserting it several times or by trying a different drive. He's also successfully fixed flaky floppies using Apple's Disk First Aid utility software. Disk First Aid will show its normally hidden activity if you press  $\%S$  after selecting a disk to check or repair, reports F. Stephen Costa of Loudonville, New York.

To guard against premature floppy failure, keep disks and disk drives away from magnetic fields. That includes a telephone with a traditional bell ringer and the power supply (located on the left side) of the Mac Plus, the 512K, and the 128K.

## Coprocessor Confusion

Since the load of virtual-memory on the Mac II is handled by the 68881 coprocessor, wouldn't this make it faster than Macs having a 68030 central processing unit (CPU)? Could the 68882 replace the 68881 in a Mac II? Can the 68882 perform virtual-memory tasks?

Michael J. Sanders  
Address unknown

The Motorola 68881 coprocessor handles complex math functions on the Mac II. The Motorola 68882 is a newer, faster math coprocessor and is used in the Mac IIfx, IIfx, and IIfx.

You can replace the 68881 in a Mac II with a 68882. Expect 25 to 40 percent improvement in tasks that involve lots of number processing, such as math calculations, statistics, and calculations of new views of complex graphics. An application designed to take advantage of the 68882's features can boost its numeric processing speed by as much as 100 percent. But otherwise, installing a 68882 has no direct benefit aside from speeding up floating-point numeric calculations.

A Mac II's 68020 CPU can use virtual memory only if you replace the standard memory-management coprocessor with a 68851 paged memory management unit (PMMU) coprocessor. You'll also need virtual-memory software, either Virtual 2.0 from Connectix (415/324-0727), or System 7.0—due out sometime this year—or A/UX from Apple. The Mac IIfx, IIfx, and IIfx don't need a 68851, since its functions are built into their 68030 CPUs.

The 68882 and 68851 chips are available from several sources, including Total Systems Integration (800/874-2288, 503/345-7395) and Tercom (206/527-1257, 800/544-9543 from 7 a.m. to 7 p.m., 800/669-7555 from 10 a.m. to 6 p.m.). Orvac Electronics (714/871-1020) has the 68851. Be sure to get 16MHz chips for a Mac II.

If you install a 68851 PMMU in your Mac II and the screen goes blank, the



chip socket on the main logic board is probably missing some pins. Take it to an Apple dealer for a free replacement logic board.

Warning: Chips have delicate pins and can sustain latent damage from static discharge during handling. Have a technician make the swap unless you know what you're doing.

## Faster Faster, Best Best

I realize I can get a faster Faster quality on an ImageWriter II by pressing the Shift, Option, and Caps Lock keys while clicking OK in the Print dialog. The ImageWriter II then prints bidirectionally (as the print head moves left and right) instead of unidirectionally (only as the print head moves right). Bidirectional printing is faster but slightly lower quality than unidirectional printing.

In Best quality, the ImageWriter II normally prints bidirectionally. How can I make it print unidirectionally for absolutely the best Best quality?

F. Stephen Costa  
Loudonville, New York  
(continues)



**A** You can't make an ImageWriter print unidirectionally in Best quality. And the print quality would not be any better if you could. Ideally, the ImageWriter II would always print bidirectionally because that's faster than unidirectional printing. However, some ImageWriter IIs don't line up dots properly when printing bidirectionally in Faster quality. The ImageWriter driver software works around this glitch by printing unidirectionally in Faster Quality.

#### Multiple Graphs and Data

**Q** Is there an application that can save three sets of data and produce three charts in one file? I use a Macintosh SE.

Karen Melzer  
Rexdale, Ontario, Canada

**A** Any spreadsheet can keep multiple sets of data in one file as long as the total amount of data doesn't exceed the maximum spreadsheet size. Wingz from Informix (913/492-3800) and Full Impact from Ashton-Tate (213/329-8000) both let you create multiple charts in one spreadsheet document.

When you use a single spreadsheet for more than one set of data, put each set in a separate work area. Arrange the work areas along an imaginary diagonal line running from the upper-left corner of the spreadsheet to the lower-right corner (see "Diagonal Construction"). That way if you

need to insert or delete rows and columns in one set of data later, the action won't affect the other sets. If you lay out your sets of data side by side, changes to one set may adversely affect other sets.

#### Auto-Scroll Substitute

**TIP:** Panorama doesn't scroll automatically if you try to drag or resize an object past the boundary of a forms window in graphics mode. You can lessen the likelihood of bumping into the window boundaries by working in a reduced view. To reduce the view, select the magnifying glass tool, press the space bar, and click. All the tools work in reduced views. It's also possible to resize or place an object beyond the window boundaries by using the Dimension command (on the Edit menu).

To return the view to actual size, select the magnifying glass tool and click once while pressing the ⌘ key.

Paul Chance  
Huntington Beach, California

#### Quick Move

**TIP:** Before leaving one page to work on another in PageMaker, choose Fit in Window from the Page menu (shortcuts: ⌘-W or, when working in actual size, Option-⌘-click). When you return to that page, you can quickly and precisely go to any part of it. To do that, press Option-⌘ for actual size, or Shift-Option-⌘ for 200 percent enlargement, while clicking on the area you

want to see. By comparison, scrolling at actual size or at a magnified view is much slower and less precise.

Rick Archer  
Fairfield, Iowa

#### Surface and Contour Plots

**TIP:** Wingz has two problems related to surface and contour graphs.

First, Wingz uses a seemingly random set of colors that makes contour graphs and surface graphs not only ugly but more confusing than if they had no color. You typically want the color bands to vary smoothly from one color at the vertical axis (*z* axis) minimum to a different color at the maximum. Those of us not yet fortunate enough to own a color laser printer generally want a smooth variation of gray shades from black to white. "Shaded Surface" shows the difference.

Second, you cannot conveniently set the number of color bands on a contour graph. The color bands correspond to vertical-axis divisions, but the vertical axis does not appear on a contour graph, so you cannot change its number of divisions. To work around this problem manually, you must first plot your data as a surface graph. There you select the vertical axis, choose Scale Info from the Axes submenu of the Graph menu, and set the Manual Scale option and the number of divisions. You can then replot the surface graph as a contour graph with the correct number of color bands by choosing Contour from the Gallery submenu of the Graph menu.

The Wingz script in "Smooth Variations" solves both problems. It sets the vertical axis for 16 shades of gray, which produces good results when printed on a 300-dpi LaserWriter using LaserWriter driver 6.0. (For more gray levels, change the script to set *variable number* to a number higher than 16.) To use the script, simply select the contour or surface graph to be converted and run the script.

Bill White  
Livermore, California

#### ADB Mating Cycles

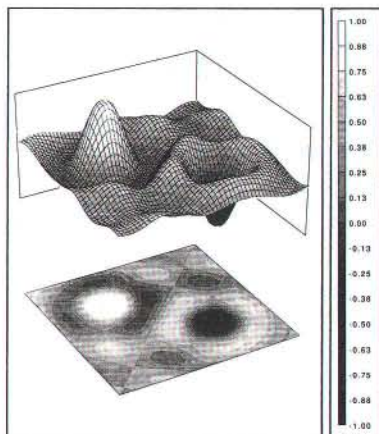
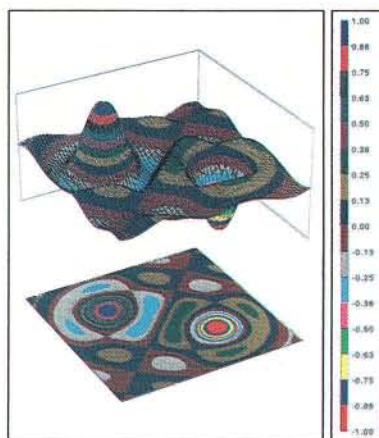
**TIP:** Mac SE and SE/30 owners who regularly transport their systems may soon face some expensive repair bills. Apparently the ADB connectors used (continues)

	A	B	C	D	E	F	G	H	I	J	K	L
1	123456789	123456789	123456789	123456789								
2	123456789	123456789	123456789	123456789								
3	123456789	123456789	123456789	123456789								
4	123456789	123456789	123456789	123456789								
5	123456789	123456789	123456789	123456789								
6	123456789	123456789	123456789	123456789								
7	123456789	123456789	123456789	123456789								
8	123456789	123456789	123456789	123456789								
9	123456789	123456789	123456789	123456789								
10	123456789	123456789	123456789	123456789								
11	123456789	123456789	123456789	123456789								
12	123456789	123456789	123456789	123456789								
13					123456789	123456789	123456789	123456789				
14					123456789	123456789	123456789	123456789				
15					123456789	123456789	123456789	123456789				
16					123456789	123456789	123456789	123456789				
17					123456789	123456789	123456789	123456789				
18					123456789	123456789	123456789	123456789				
19					123456789	123456789	123456789	123456789				
20					123456789	123456789	123456789	123456789				
21					123456789	123456789	123456789	123456789				
22					123456789	123456789	123456789	123456789				
23					123456789	123456789	123456789	123456789				
24					123456789	123456789	123456789	123456789				
25					123456789	123456789	123456789	123456789				
26									123456789	123456789	123456789	123456789
27									123456789	123456789	123456789	123456789
28									123456789	123456789	123456789	123456789
29									123456789	123456789	123456789	123456789
30									123456789	123456789	123456789	123456789
31									123456789	123456789	123456789	123456789
32									123456789	123456789	123456789	123456789
33									123456789	123456789	123456789	123456789
34									123456789	123456789	123456789	123456789
35									123456789	123456789	123456789	123456789
36									123456789	123456789	123456789	123456789

#### Diagonal Construction

By organizing different parts of a spreadsheet along an imaginary diagonal, you prevent changes in one part from inadvertently affecting other parts.





#### Shaded Surface

Standard Wingz colors in surface and contour graphs don't provide useful shading information (top). Applying the script in "Smooth Variations" to those graphs achieves smooth, intuitive shading (bottom).

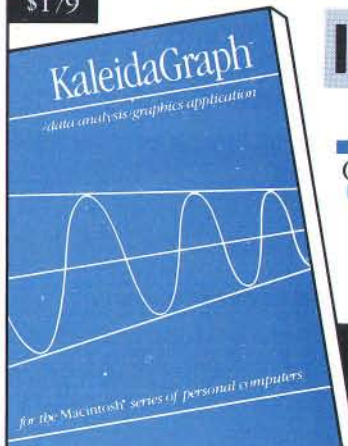
in the keyboard and the Mac may wear out after only 500 mating cycles. If you disassemble and transport the Mac to and from work every day as I do (two mating cycles per day), expect your keyboard and Mac ADB connectors to last less than one year. If you frequently transport your Macintosh, I recommend leaving the keyboard and mouse cables attached.

If the keyboard or mouse starts operating only intermittently, press the various connectors to try to determine which one is bad. Connectors are fairly easy to replace (some soldering is required). This route is far less costly than replacing the keyboard or main logic board (your dealer's likely recommendations). The connector is AMP part number 749264-1 or 7491811 (call 800/522-6752 for the name of an AMP distributor). Do not use other

\$295



\$179



## Access text and graphics mainframe applications from one easy-to-use program

■ **EMULATE** industry standard text and graphics terminals, including the DEC VT100, DG D200, Tektronix 4014 and Tektronix 4105 ■ **COMMUNICATE** with a wide variety of mainframe computers or information services ■ **TRANSFER** files using popular protocols, including XModem, YModem and Kermit ■ **BACKGROUND** operation is supported under MultiFinder.

developed by



## Import data, analyze the data, and generate scientific and business graphics from one easy-to-use program

■ **FLEXIBLE** data import facilities ■ **FAST** operation (5 to 20 times faster than Cricket Graph™ version 1.2) ■ **LARGE** data sets supported (32,000 data points per variable) ■ **FEATURES** including: curve fitting; log, linear, polar and probability plots; high-resolution printing ■ **PROGRAMMABLE** RPN Calculator and Algebraic Formula entry.

See us at Moscone Booth 2448



SYNERGY SOFTWARE

2457 Perkiomen Ave., Reading, PA 19606, 215-779-0522

Circle 286 on reader service card

# COPY II<sup>®</sup> for Apple Macintosh

ver. 7

Copy II for the Macintosh is a collection of three utility programs and a new desk accessory, Locate. Copy II combines powerful utilities which enable you to: maintain and repair your floppy and hard disks, create archival backups and allow you to install applications directly onto your hard disk.

Here is what the experts say: "It's a well-rounded collection of useful disk utilities that no Macintosh user should be without."

John Gillett  
Macworld 5/89

and

"... Copy II is now a utilities package whose components are powerful, useful, and, best of all, easy to use."

Jake Paden  
MacUser 3/89



## SEARCH AND FIND

Locate is a fast information finder in a desk accessory. You can search for full or partial file names, up to three key words, or both. Once found, Locate displays the information and under Multifinder will launch the application.

**Requirements:** Mac 512e, MacPlus, Mac SE, Mac II. Supports H.F.S., M.F.S., 400K and 800K disks, 1 or 2 drives, hard disks and all available memory.

**To Order:** see your local dealer.

**\$39.95**

*Central Point  
Software*

INCORPORATED  
- Founded in 1981 -

15220 N.W. Greenbrier Pkwy., #200  
Beaverton, OR 97006 USA  
503/690-8090



# Tomorrow's Upgrade For Your Mac Is Only \$89\*

**MacWAREHOUSE SALE**

A MacWarehouse Memory Expansion Kit will dramatically increase the power of your Mac. And our fast, reliable, overnight service will have your Kit in your hands tomorrow!

## MORE BRAIN POWER FOR YOUR MAC

Never again will you have to quit your word processor just to answer a question about a spread-sheet. Install extra memory and you can leave your letter open while you refer to last month's sales figures. You can edit those monstrous scanner files with advanced graphics applications or develop your own custom HyperCard stacks. More memory means more power at your fingertips.

## PLUG IN INSTALLATION

Adding memory doesn't require technicians in lab coats. You don't even need a soldering iron. Just open your Mac, slide out the main circuit board, and plug in your memory card. Complete installation instructions are included with each memory kit.

## WHAT DO I NEED?

Our helpful sales and technical staff is standing by to answer any questions and take the mystery out of memory upgrades. Memory cards come with one megabyte on each card and are usually sold in pairs — (2@ \$89 each).

The chart explains exactly what you need to achieve the desired level of performance.

To upgrade a 4-socket Mac Plus or SE to this amount of memory	Do this: (install in multiples of two only)
2 MB	Remove all four existing 256K SIMMs, install two 1M SIMMs, leave two sockets for future expansion.
2½ MB	Remove only two 256K SIMMs, install two 1M SIMMs.
4 MB	Replace all four 256K SIMMs with four 1M SIMMs.
To upgrade an 8-socket Mac II, IIfx, IIfx, or SE30 to this amount of memory	Do this: (install in multiples of four only)
4 MB	Remove all four existing 256K SIMMs, install four 1M SIMMs, leave remaining sockets for future expansion.
5 MB	Keep existing 256K SIMMs, install four 1M SIMMs in remaining sockets.
8 MB	Remove all four 256K SIMMs install eight 1M SIMMs.

To open your Mac Plus or SE, you'll need a specially designed tool — it's available from us as part of a handy tool kit for just \$15.

## WHAT YOU NEED TO KNOW

Memory chips come factory-installed on plug-in cards, called SIMMs (Single In-line Memory Modules). Each one megabyte SIMM card holds eight top quality, memory chips. We carry chips by all the major manufacturers like Texas Instruments, Intel and Samsung. We also carry the full line of Dove memory products.

\*Prices can vary a lot, based on quality, speed and demand. At press time

our price for 1MB, 120 ns Samsung kits is \$89. Please call for the very latest prices and availability. Our sales staff will tell you what you need and help make your choice an easy one.

## SPEED

Do you need 80, 100 or 120 Nanosecond (ns) chips? Nanoseconds are billionths of a second, so an 80 ns chip responds faster than a 100 ns chip. The original Mac used relatively slow 150 ns memory chips. The 68020 processor needs 120 ns (or faster) chip, and the 68030 Macs like the speedier model.

## OVERNIGHT DELIVERY

Place your order by 12:00a.m.(E), weekdays and we'll deliver overnight for just \$3.00. There's never been a better time to consider a memory upgrade. Call our toll-free number now and tomorrow morning your Mac will be off to a brand new start.

**MacWAREHOUSE™**  
**1-800-255-6227**

Call toll-free  
Twenty-four hours a day,  
seven days a week.  
Inquiries 1-201-367-0440  
Fax 1-201-905-9279  
© Micro Warehouse Inc.

## MACWAREHOUSE 30 DAY MONEY BACK GUARANTEE

If, for any reason, you are dissatisfied with your MacWarehouse Memory Kit, you may return it for a full refund within thirty days of purchase. All you have to do is call us for a return authorization number and return the product, postage paid, in its original condition, with the original packaging and documentation.

**ONE YEAR WARRANTY.** MacWarehouse also guarantees its Memory Kits against manufacturer defects for one year from the date of purchase. We will repair the item or replace it at our discretion.





# Buy a Hard Drive Now And Save Up To \$300

"The best deal in hard drives just got better!"

Between now and March 31st, MacWarehouse is offering savings on every hard drive we sell. So, if you're thinking of buying a new hard drive, your timing couldn't be better. Check out our sale prices and your savings, compared to our December 1989 prices, in the chart.

We offer drives by leading manufacturers like Cutting Edge, C.M.S., Quantum, Dolphin, PLI Infinity Turbo and others — all at unheard of low prices.

Let our helpful sales staff take the hassle out of buying a drive. They'll tell you which drive



mechanism each manufacturer uses. They'll also tell you about access speed, reliability, software and the manufacturer's warranty.

## MONEY BACK GUARANTEE

They'll tell you which drives come with the MacWarehouse 30-day money back guarantee. Try one at home. And if, for any reason, you're not 100% satisfied,

## LIMITED TIME OFFER

MacWarehouse sale prices, based on capacity, are shown in the chart. Also shown are the savings from pre-holiday prices. (This is a limited time offer, valid

through March 31, 1990.) Overnight delivery is just \$3, anywhere in the Continental United States.

So call us now and tomorrow morning you'll be up and running with the best hard drive deal in the business!

	20 + MB		30 + MB		40 + MB		60 + MB		80 + MB		***40 + Removable	
	SALE PRICE	YOU SAVE	SALE PRICE	YOU SAVE	SALE PRICE	YOU SAVE	SALE PRICE	YOU SAVE	SALE PRICE	YOU SAVE	SALE PRICE	YOU SAVE
Cutting Edge	359	\$80	439	\$60	499	\$50	599	\$30	659	\$80	819	\$80
CMS, MacStack	459	\$70	499	\$46	599	\$26	649	\$50	769	\$30	839	\$36
Dolphin, Integra	429	\$70	479	\$116	549	\$170	615	\$163	695	\$300	879	\$260
PLI, Infinity Turbo	-	-	569	\$20	619	**\$26	-	-	-	-	1098	\$21
*Quantum Internal	-	-	-	-	499	\$26	-	-	829	\$40	-	-

Savings are calculated from MacWarehouse December 1989 published prices. \*Quantum drives are for internal installation and require a 3.5 Internal Drive Kit for \$39. \*\*PLI is a 50meg turbo drive. \*\*\*40 + meg Removable Cartridge Drives come with 1 cartridge. Additional cartridges available.

just return it to us within thirty days and we'll refund your money.

Then there's the MacWarehouse Loaner Drive Program. Buy from MacWarehouse and if you ever have a problem, you won't be without a drive for more than a few hours.

## READY TO USE

A hard drive from MacWarehouse couldn't be easier to use. We'll tell you which ones come pre-formatted — ready to use right out of the box. You just plug in, turn on your Mac and go!

If you do need any help, the MacWarehouse Technical Support staff is standing by our toll-free lines to assist you.

**MacWAREHOUSE™**  
**1-800-255-6227**

Call toll-free  
Twenty-four hours a day,  
seven days a week.  
Inquiries 1-201-367-0440  
Fax 1-201-905-9279  
© Micro Warehouse Inc.

## MacWarehouse 30-Day Money Back Guarantee

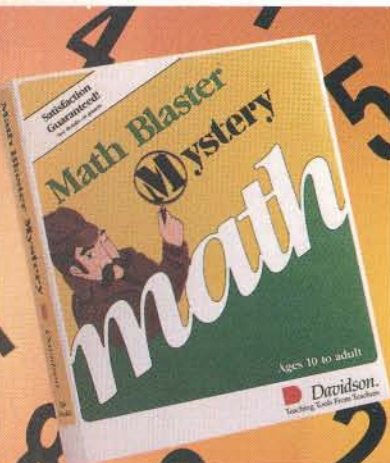
Many of our drives come with the MacWarehouse 30-Day Money Back Guarantee. If, for any reason, you're not completely satisfied, call us within thirty days of receipt for a return authorization number and full refund of the purchase price.



**OVERNIGHT DELIVERY**  
**ONLY \$3.00**  
(See details below)

**GUARANTEE**

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.

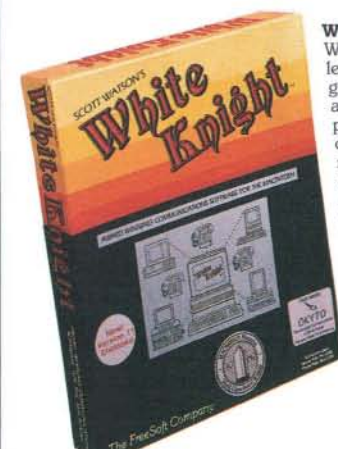


### Math Blaster Mystery (Davidson & Associates, Inc.)

Surprise! While you weren't looking somebody put the fun back into math equations, word problems and logical thinking. Who dunnit? Davidson & Associates did...with Math Blaster Mystery! For ages 10 to adult, Math Blaster Mystery offers four challenging activities covering positive/negative numbers, fractions, decimals, percents, interest and pre-algebra. Exciting Animation and sound motivate you to search for clues while climbing the detective ladder from Computation Cadet to Chief Problem Solver! (educational/personal) \$26.

### Goldstein & Blair

The Macintosh Bible	20.
<b>I/O Designs</b>	
Imageware II Carrying Case	49.
Macinware IIx Carrying Case	85.
Macinware Mac II Carrying Case	99.
Macinware Plus Carrying Case	64.
Macinware SE Carrying Case	75.
Monitorware Apple RGB Case	79.
The Ultimate SE Carrying Case	79.
<b>Kalmar</b>	
Rolltop Teak disk holder 45	14.
Rolltop Teak disk holder 90	21.



### White Knight 11.0 (FreeSoft)

White Knight is Scott Watson's successor to the legendary Red Ryder telecommunications program. It's more than just a new version - the added new features list alone is more than 20 pages long! The 270+ pg. manual has plenty of step by step tips to help beginners communicate like the pros in no time. White Knight comes bundled with Oktyo, a revolutionary Mac-to-Mac file transfer program. A free subscription to the GEnie network is also provided. (communications) \$89.

### ACCOUNTING & PERSONAL FINANCES

<b>Aatrix</b>	
Checkwriter	37.
Payroll 3.5	109.
Payroll PLUS	149.
TimeMinder	175.
<b>Bedford (Computer Associates)</b>	
Simply Accounting	225.
<b>DAC</b>	
Dac-Easy Light	42.
<b>Intuit</b>	
Quicken 1.5	36.
<b>Layred, Inc.</b>	
at Once!	285.
<b>MECA</b>	
Managing Your Money	124.
<b>Monogram</b>	
Business Sense	269.
Dollars and Sense	81.
<b>Nolo Press</b>	
For The Record	29.
WillMaker	32.

### Casino Master (Centron)

Let it Ride! You can bet on having hours of fun with Casino Master's five exciting casino games. Includes **Blackjack Ace**, **Crapsmaster**, **Roulette Master**, **Pokermaster** and **Baccarat Master**. Exact table simulation, mouse controlled betting, selectable bankroll, stored win/lose statistics and complete manual included. Mac II version available in full color! An odds-on favorite with professional gamblers. (entertainment) Individual games \$27 each/5 game Casino Master Package \$49. / Deluxe Mac II version \$55.



### Polaroid

Circular Polarizing Filter	35.
<b>Read-Write</b>	
CompuDuster	29.
Kleen & Dry CRT Pads	5.
Computer Care Kit	45.
<b>Smack-a-Mac</b>	
Smack-a-Mac	9.
<b>SoundSight</b>	
FastKeys 2.0	35.
<b>Targus, Ltd.</b>	
Deluxe Plus/SE-XKB Case (black)	69.
ImageWriter II Case (black)	45.
Mac Plus/SE Case (black)	55.
IIcx/IIci Case	Call.

### ShopKeeper Software

Bill-It 2.0	99.
<b>Softview</b>	
MacInTax Federal '89 - 1040	65.
State supplements	ea. 56.
MacInTax/Quicken 1.5 bundle	95.
Taxview 1040	355.
<b>Survivor</b>	
MacMoney 3.5	60.

### BLANK MEDIA

<b>B.A.S.F. made in U.S.A.</b>	
DS/DD (box of 10)	14.
DS/High Density (1.44 Meg)	24.
<b>Peripheral Land, Inc.</b>	
Turbo 40 Cartridge	115.
<b>Sony</b>	
DS/DD (box of 10)	14.
DS/HD (1.44 mb)	25.

### BUSINESS & PRESENTATION

<b>A Lasting Impression</b>	
ResumExpert (word vers.)	39.
Cover Letters or Students	39.
Manager Edition	39.
Sales and Marketing Edition	39.
<b>Adobe Systems, Inc.</b>	
TrueForm SetUp	225.
<b>AEC Management Systems</b>	
FastTrack Schedule	115.

### ACCESSORIES

<b>Apple</b>	
Toner Cartridges LaserWriter	111.
<b>Avery Labels (full line available)</b>	
Color Coded 3.5 Diskette	4.
Laser 3.5 Diskettes	29.
Laser File Folders	6.
Laser Transparencies	22.
<b>Basic Needs, Inc.</b>	
HardTop Keyboard Covers	15.
HardTop ImageWriter Covers	17.
Keyboard Flip	6.
Dust Covers - Grey Nylon Ripstop	
ImageWriter or LaserWriter	12.
Mac Plus and keyboard	11.
Mac SE & extd. or reg. keyboard	11.
Mac II and extd. keyboard	12.
Universal Laser Printer Stand	28.
Utility Pac	11.
<b>Computer Friends, Inc.</b>	
MacInker (IW & IW II)	41.
<b>Curtis</b>	
Computer Tool Kit (52 pc.)	49.
Curtis Clip	6.
Disk Holder (holds 40)	9.
Jewel Surge Suppressors	Call.
<b>Ergotron</b>	
MacTilt-SE	68.
MacTilt II-RGB	75.

### Kensington

Anti-Glare Filter	33.
Apple Security Kit	34.
Mac II Stand w/Cable Kit	64.
MasterPiece Mac II	105.
PowerBacker 360 UPS Line	269.
PowerBacker 800 UPS Line	749.
PowerBacker 1200 UPS Line	949.
System Saver	63.
<b>Mobius Products</b>	
Fanny Mac QT	59.
SE Silencer	39.

### Macintosh SE/Plus w/Extended Keyboard Carrying Case (Targus)

Pamper your Mac with a Targus carrying case made of Zilicone treated nylon to give you waterproof durability and an impact absorbing high-density foam layer with a soft protective lining for complete protection. Cushioned shoulder pad and handles provide extra comfort and convenience. Plus there's room for everything from your Mac, a hard disk drive, and the extended keyboard to pockets for your mouse, floppies, cables, and pens. Full Targus Macintosh line available in black. Some styles available in blue, burgundy, and platinum. (accessories) \$69.





# SCRAMBLE!

**N**

ightmare!  
It's midnight and  
your hard disk  
crashes. Or you  
read about a new  
piece of software you  
just can't do without.

Remember, the  
sun never sets on the  
folks at MacWare-  
house. Ring...ring  
(only three rings?)...  
"How may I help  
you?"...."No problem  
Sir, we'll take care of  
it...We'll get it to you  
overnight — and the  
charge is just \$3."

While you drift off to  
sleep the computers  
whirr. At our satellite ware-  
house — a former SAC air-  
force base — ROBOMAC



prepares your order for  
immediate dispatch.

The flight crews  
are standing by. One  
last hand of Old Maid.

Don't want to miss  
that last order at  
12:01! Then,...

SCRAMBLE! They'll  
fly through the  
night to deliver  
your order (and  
thousands of  
others) not  
long after the  
morning paper.

That's right.

Order until  
12:00 am for over-  
night delivery. It's  
called MIDNIGHT  
EXPRESS SERV-  
ICE and nobody  
else has it.

Nobody gets it to you  
faster than MacWarehouse  
... Nobody!

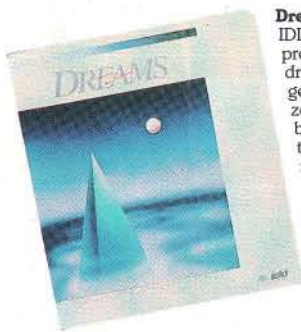


## Win the NEW Mac Portable!

It's here at last! It has all the power  
and convenience of your Mac in a 15.7  
pound portable package.

And you can win the new  
Macintosh Portable by enter-  
ing the MacWAREHOUSE PORT-  
ABLE COMPUTER GIVEAWAY. Your name

is automatically entered into the drawing when you  
order from MacWAREHOUSE, or when you fill out and send  
in the Official Entry Coupon below.



### Dreams (Innovative Data Design)

IDD, creator of MacDraft, offers a powerful  
precision drawing tool for professional scaled  
drawings, illustrations, presentations and  
general purpose graphics. Dreams offers  
zoom, rotation, layers, dimensioning, sym-  
bol libraries and a vast array of drawing  
tools, as well as many advanced illustration  
features. You can merge shapes together,  
cut edges of objects using other objects as  
templates...even glue lines and curves to-  
gether to form unique shapes to be filled  
with colors or patterns. (graphics) \$325.



### MacInTax Federal '89-1040 (Softview)

MacInTax Federal '89-1040 guides you through  
the process of preparing your Federal Taxes  
(eight state tax modules also available at \$56  
ea.). Just type in the requested numbers, and  
MacInTax does the rest. When finished, print  
the completed return on the LaserWriter or the  
ImageWriter. If you used MacInTax last year, it  
reads those files and brings forward relevant  
items, saving time and reducing errors. Its tax  
planner shows the effects of various tax strate-  
gies. (finance) \$65.

### SuperPaint 2.0 (Sificon Beach)

SuperPaint gives you the freedom of paint and the  
precision of draw in one easy-to-use program!  
Features powerful AutoTrace to automatically  
convert bitmapped paint graphics into high re-  
solution draw objects, an adjustable airbrush, and  
a freehand tool to quickly sketch editable  
Bezier curves. You can mix fonts, styles and  
sizes within text blocks, and freely rotate,  
scale, or slant text and graphics without  
sacrificing high-resolution output. Over-  
sized documents automatically "tile" over  
multiple pages, in either "Portrait" or "Landscape"  
orientation. (graphics) \$125.



I'm Kerry, call me at:

**MacWAREHOUSE**  
**1-800-255-6227**  
(1-800-ALL-MACS)

### Inquiries:

**FAX: 201-905-9279**

Call anytime — day or night  
24 hours a day, seven days  
a week

\*Midnight Express service available  
weekdays.



### OFFICIAL ENTRY COUPON

MWDØ

#### MacWarehouse Portable Computer Giveaway

1690 Oak Street, P.O. Box 1579, Lakewood, NJ 08701

When you order by phone or mail, you are automatically entered  
in the drawing. You can also mail this coupon or call our contest  
entry line. 1-800-367-0787. (In CT., call 1-203-852-8968)

Name \_\_\_\_\_

Address \_\_\_\_\_ Apt. \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_



# FROM MacWAREHOUSE™



## FastLabel

End label hassles with FastLabel - the revolutionary way to print labels on the ImageWriter and LaserWriter. Pre-formatted templates to instantly create labels. One step text loading from any commercial database. Save hours of your valuable time! (business) \$49.



## Managing Your Money

A fully integrated software program addressing every aspect of personal and small business finance. Write and print checks, set up a personal budget, estimate your taxes and more. (finance) \$124.



## Ferrari Grand Prix

Gentlemen Start Your Engines! Squeeze into the cockpit of this thrilling Formula One racing simulator. Test your skill, concentration and nerve while chasing two cagey opponents around world famous Grand Prix courses. Handicap opponents and personalize race-courses for exciting competition. Spectacular sound and graphics. (entertainment) \$32.



## Dynodex-Instant Address Book

Fast on-line address database that prints elegant, double-sided address pages for Filofax, Day-Timer, and most organizer systems. Includes binder, divider tabs, and 100 sheets of "no-fuss" laser paper. Powerful database functions include find, sort, select, import, export, merge, auto-dial, and much more. (business) \$89.

<b>Odesta</b>	
Double Helix III .....	339.
GeoQuery .....	199.
ProVUE .....	
Panorama .....	257.

## DESK ACCESSORIES

<b>Casady &amp; Greene</b>	
QuickDEX .....	31.
<b>JAM Software</b>	
Smart Alarms & Appt. Diary .....	49.
Smart Alarms (1 - 4 users) .....	99.
Smart Alarms (5 - 8 users) .....	149.
Smart Alarms (9 - 16 users) .....	199.
<b>Preferred Publishers</b>	
DAtabase 1.5 .....	69.
Vantage 1.5 .....	52.
<b>Solutions</b>	
SmartScrap & The Clipper 2.0 .....	45.

## DESKTOP PUBLISHING

<b>Aapps</b>	
MicroTV .....	289.
<b>Aldus</b>	
PageMaker 3.02 .....	385.
PageMaker Color Extension .....	135.
<b>Broderbund</b>	
DTP Advisor .....	47.
<b>Data Translation</b>	
PhotoMac .....	609.
<b>Emerald City Software</b>	
Smart Art I, II, or III .....	ea. 85.
<b>Icom Simulations</b>	
Mackern .....	119.
<b>Letraset</b>	
ColorStudio or FontStudio .....	Call.
ImageStudio .....	275.
Ready, Set, Go! .....	275.

## VocabuLearn (Penton Overseas, Inc.)

A computer enhanced foreign language learning system for the Mac. A versatile, interactive HyperCard Stack, available in five languages and two levels. Each comes with two 90 minute audio cassettes, a handy size word list with over 1500 useful words and expressions, and HyperCard V.1.2. This is a great bilingual aid. Ideal learning tool for students, travelers, business people, and educators alike. Increase your comprehension using the building blocks of language! (education) French, Spanish, German, Italian \$30. ea. Japanese \$36.



<b>Olduvai</b>	
Read-It! 2.1 (OCR) .....	245.
Read-It! Personal 2.0 .....	125.
Read-It! TS (ThunderScan) .....	79.
<b>Quark</b>	
QuarkStyle .....	169.
Xpress .....	449.
<b>Spinnaker/Springboard</b>	
Plus 1.1 .....	115.
Springboard Publisher II .....	109.
<b>TimeWorks</b>	
Publish-It! .....	225.

## DISK DRIVES/BOARDS

<b>Aristotle Industries, Inc.</b>	
HardPac Mac 20 Meg .....	469.
HardPac Mac 40 Meg .....	749.
HardPac Mac 80 Meg .....	1089.
HardPac Mac 105 Meg .....	1229.
<b>CMS</b>	
MacStack 20 Meg .....	459.
MacStack 30 Meg .....	499.
MacStack 45 Meg .....	599.
MacStack 60 Meg .....	649.
MacStack 80 Meg .....	769.
MacStack 44 Meg Removable .....	839.

## CanOpener 1.1 (Abbott Systems)

Raider of the lost bytes! Don't waste time digging for buried text, graphics, sounds etc.... With CanOpener hot on its trail you can search anywhere and retrieve almost anything. Even locates text within pictures then gives you the whole picture! Once found, store information in CanOpener's personal library for safekeeping. (utility) \$65.



## Cutting Edge

800K External Floppy Drive .....	149.
SyQuest Removable 45 Meg .....	819.
Under the Mac 20 Meg .....	359.
Under the Mac 30+ Meg .....	439.
Under the Mac 45+ Meg .....	499.
Under the Mac 60+ Meg .....	599.
Under the Mac 80+ Meg .....	659.
<b>Dayna Communications</b>	
Dayna File Single 360K (5 1/4") .....	525.
Dayna File Dual 360K & 1.44M .....	729.
<b>Dolphin Systems Tech</b>	
Integra 20 Meg .....	429.
Integra 30 Meg .....	479.
Integra 40 Meg .....	549.
Integra 60 Meg .....	615.
Integra 80 Meg .....	695.
Flipper 44 Meg .....	879.
<b>Fujitsu</b>	
800K Disk Drive .....	159.
<b>Kennect Technology</b>	
Drive 2.4 .....	329.
Rapport .....	199.

## EDUCATIONAL/PERSONAL

<b>Beacon Technology</b>	
GEMS of the Word .....	25.
<b>BrightStar</b>	
Alphabet Blocks .....	30.
Talking Tiles .....	27.
<b>Bootware Software</b>	
ResumeWriter Pro .....	58.
<b>Davidson</b>	
Math Blaster Mystery .....	26.
Speed Reader II .....	26.
<b>First Byte</b>	
The Dinosaur Discovery Kit .....	27.
The Puzzle Storybook .....	27.
The Rhyming Notebook .....	27.
<b>Help Software, Inc.</b>	
Desktop Help for Excel .....	50.
<b>Learning Company</b>	
Math Rabbit .....	31.
Reader Rabbit .....	31.
<b>MicroTech</b>	
Elementary Signer .....	49.
Finger Speller .....	29.
<b>Nordic Software (full line available)</b>	
MacKids Turbo Math Facts .....	28.
MacKids Preschool Pack .....	35.
MacKids Word Quest .....	30.
<b>Penton Overseas</b>	
VocabuLearn French, Spanish, German, Italian .....	ea. 30.
VocabuLearn Japanese .....	36.
<b>The Software Toolworks</b>	
Mavis Beacon Teaches Typing .....	32.
<b>Visionary Software</b>	
Synchronicity .....	39.
<b>Voice &amp; Video Instruction Videos</b>	
HyperCard or Pagemaker 3.0 .....	ea. 35.
Word 4.0 Video Tape .....	35.

## Peripheral Land, Inc.

Infinity Turbo 40 Meg .....	1098.
Turbo Floppy 1.4 .....	359.
<b>Quantum</b>	
Quantum 40 MB Raw Drive .....	499.
Quantum 80 MB Raw Drive .....	829.
<b>RasterOps</b>	
RasterOps Colorboard 264 .....	760.

## The "ULTIMATE" SE Carrying Case (I/O Design, Inc.)

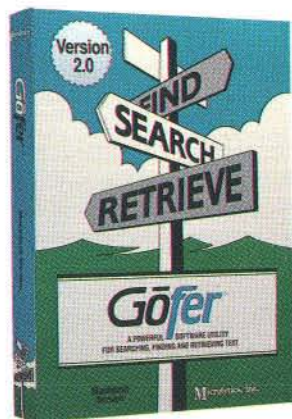
The "ULTIMATE" SE Carrying Case is designed with the same high quality standards as our other MacLuggage products. This case offers internal, padded compartments for ANY Macintosh keyboard, mouse, external hard disk and cables. It also features 2 additional exterior pockets for everything from disks to umbrellas. Combine these features with sturdy Dupont Cordura nylon and 1/2 inch high density foam padding and you'll see why this is the "Ultimate" carrying case for your Mac. (accessories) \$79.





# MORE FOR YOUR MONEY...

<b>Aldus</b>	
Persuasion 2.0 .....	339.
<b>Antic Software</b>	
FlexForm Bus.Temp Vol 1 or 2 .... ea.	49.
<b>Ashton-Tate</b>	
Full Impact .....	249.
<b>Claris</b>	
MacProject II .....	369.
SmartForm Designer w/Assistant .....	295.
<b>Cognition Technology</b>	
MacSMARTS PRO .....	249.
<b>Cricket (Computer Associates)</b>	
Cricket Graph 1.3 .....	115.
Cricket Presents .....	285.
<b>HyperPress Publishing</b>	
Intelligent Developer .....	219.
<b>Informix</b>	
WingZ 1.1 .....	249.
<b>Microsoft</b>	
Excel 2.2 or PowerPoint 2.1 .... ea.	249.
The Microsoft Office .....	599.
Works 2.0 .....	185.
<b>Portfolio Systems</b>	
Dynodex-Instant Address Book .....	89.
<b>Power Up</b>	
Address Book Plus .....	53.
Address Book Plus w/Binder .....	99.
Calendar Creator .....	38.
FastForms! .....	89.
Letter Writer Plus .....	53.



## Gofer (Microlytics)

The ultimate text finder. A powerful software utility that searches, finds and retrieves text. Searches through countless files on your hard disk drive or floppy disks to find the text you need. A phrase, a fact, a note, a date. If you need it, Gofer finds it in seconds. You can automatically import the section of text into the document you're currently working in. You save hours searching through files. Gofer operates as a Macintosh desk accessory. (utility) \$45.

## Preferred Publishers

Direct Mail .....	54.
<b>ProPlus</b>	
Wall Street Investor .....	449.
<b>Satori</b>	
Bulk Mailer 3.2.3 .....	78.
<b>Softstream International</b>	
Endeavour Planner .....	95.
<b>Symantec</b>	
More II 2.01 .....	249.
<b>Symmetry</b>	
KeyPlan .....	249.
<b>Synex</b>	
MacEnvelope 4.1 .....	79.
MacEnvelope Plus .....	149.
MacPhonebook .....	40.
<b>Vertical Solutions</b>	
FastLabel .....	49.

## CAD/CAE

<b>Claris</b>	
ClariscAD .....	595.
<b>Generic Software</b>	
Generic CADD Level 1 .....	84.
<b>Graphsoft</b>	
MiniCad+2.0 .....	519.

## TravelModem (Prometheus)

The TravelModem from Prometheus combines all the features of their Data/Fax modems in a small card designed to fit snugly in the modem slot of your Mac Portable. Send faxes, collect your electronic mail or dial into the office network from any remote location. TravelModem is the ideal traveling companion for the Mac user on the go! Includes a free copy of MacKNOWLEDGE and a customized version of BackFAX. (modems) \$ 205.

## Innovative Data Design

MacDraft .....	175.
<b>I.S.I.</b>	
Precision .....	155.
<b>Strata</b>	
StrataVision 3D .....	375.

## COMMUNICATIONS & NETWORKING

### CE Software

In/Out (1 to 5 Users) .....	128.
QuickMail 2.0 (1-10 Users) .....	249.

### CompuServe

CompuServe Navigator 3.0 .....	39.
CompuServe Subscription Kit .....	24.

### Connect Inc.

MacNet .....	47.
--------------	-----

### DataVIZ

MacLink Plus w/Cable 4.1 .....	125.
MacLink Plus/Translators 4.1 .....	109.

### Dove

FastNet SCSI .....	749.
FastNet III .....	375.
FastNet SE or SE/30 .....	ea. 375.

### Dow Jones

News/Retrieval Membership .....	24.
---------------------------------	-----

### Farallon

Timbuktu 3.0 .....	95.
Timbuktu Remote 1.0.1 .....	125.
TrafficWatch .....	125.

### PhoneNET PLUS

PhoneNET Repeater .....	33.
PhoneNET Star Controller .....	319.

### FreeSoft

White Knight 11.0 .....	89.
-------------------------	-----

### Hayes

Smartcom II 3.1 .....	85.
-----------------------	-----

### Infosphere

Liaison .....	175.
---------------	------

### InSignia Solutions

Soft PC (Mac II) .....	245.
------------------------	------

### Liaison

Soft PC (Mac II) .....	245.
------------------------	------

### MetaComet

AccuWeather Forecaster .....	58.
------------------------------	-----

### Microcom Software

Carbon Copy Mac .....	119.
-----------------------	------

### Prodigy

Mac Starter Kit .....	27.
-----------------------	-----

### Prometheus

Acknowledge .....	289.
MacKNOWLEDGE .....	149.

### Shiva

NetBridge .....	339.
NetSerial X232 .....	279.

### Software Ventures

Microphone II v.3.0 .....	219.
---------------------------	------

### TOPS

NetPrint .....	119.
FlashBox .....	122.
FlashCard .....	155.
Repeater .....	122.
Teleconnectors .....	29.
TOPS 2.1A .....	159.
TOPS 3.0 Network Bundle .....	189.
TOPS DOS Network Bundle .....	165.

### Traveling Software

Lap Link .....	81.
Lap-Link III Connectivity Pac .....	114.
Lap-Link III Network Pac .....	189.

## MetaComet

AccuWeather Forecaster .....	58.
------------------------------	-----

## Microcom Software

Carbon Copy Mac .....	119.
-----------------------	------

## Prodigy

Mac Starter Kit .....	27.
-----------------------	-----

## Prometheus

Acknowledge .....	289.
MacKNOWLEDGE .....	149.

## Shiva

NetBridge .....	339.
NetSerial X232 .....	279.

## Software Ventures

Microphone II v.3.0 .....	219.
---------------------------	------

## TOPS

NetPrint .....	119.
FlashBox .....	122.
FlashCard .....	155.
Repeater .....	122.
Teleconnectors .....	29.
TOPS 2.1A .....	159.
TOPS 3.0 Network Bundle .....	189.
TOPS DOS Network Bundle .....	165.

## Traveling Software

Lap Link .....	81.
Lap-Link III Connectivity Pac .....	114.
Lap-Link III Network Pac .....	189.

## DATABASE SOFTWARE

### Acius

4th Dimension 2.0 .....	469.
-------------------------	------

### AEC Management Systems

AEC Information Manager .....	409.
-------------------------------	------

### Blyth

Omnis 5 .....	375.
---------------	------

### Claris

FileMaker II .....	219.
--------------------	------

### Fox Software

FoxBASE+/Mac .....	295.
--------------------	------

### Microsoft

File 2.0 .....	125.
----------------	------

**■ VISA and MASTERCARD accepted. No surcharge.**

■ Your credit card will not be charged until your order is shipped.

■ If we must ship a partial order, we pay the freight on the remaining portion.

■ All U.S. shipments are insured at no extra charge.

■ C.O.D. orders accepted (add \$6.00 including shipping) — \$1,000 maximum. Cash, money order, or cashier's check.

■ Corporate purchase order accepted subject to credit approval.

■ All products are covered by a 120 day limited warranty.\*

■ Sales Tax: CT residents add 8%, NJ residents add 6%. Ohio residents add appropriate tax.

**SHIPPING**

■ All orders add \$3.00 per order. We ship Airborne Express overnight unless UPS Ground delivers overnight. (Some rural areas require an extra day.)

■ Orders placed by 12:00 Midnight (EST) (weekdays) for "in stock" items ship same day (barring system failure, etc.) for overnight delivery.

■ C.O.D. orders ship via UPS (Blue Label if you are more than 2 days from us via UPS Ground). Charge is \$6 including shipping.

■ Alaska, Hawaii, outside continental U.S., APO/FPO call 201-367-0440 for information.

\*Defective software replaced immediately. Hardware replaced or repaired at our discretion.

I'm Kerry, call me at:  
**1-800-255-6227**  
 (1-800-ALL-MACS) Now works in Canada.

Inquiries: 201-367-0440 Fax # 201-905-9279

**MacWAREHOUSE™**

1690 Oak Street, P.O. Box 1579,  
 Lakewood, NJ 08701

**ORDER TOLL-FREE  
 24 HOURS A DAY**



## Liaison

Liaison is the Eddy award winning software for connecting AppleTalk networks locally or remotely. Dial into AppleShare, MacServe or TOPS and access your E-mail anywhere, anytime. Offers exceptional flexibility, performance and network security. (networking) \$175.



## HandOff

HandOff lets you open any document from the finder, even if its application is missing. You can specify a compatible substitute based on the document's creator or file-name extension, even across networks. Jean-Louis Gasse calls it "a nice, unobtrusive and very much needed extension to my Macintosh". (utility) \$32.



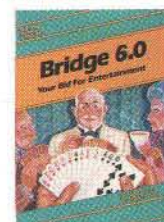
## BASF 3.5" High Density Micro Diskettes

High 1.44 meg. capacity diskettes with no capacity for error. Every bit, every byte, on every track of each BASF 3.5" Micro Diskette is certified 100% error-free, manufacturer warranted for life. Made in the U.S.A. (blank media) \$24. Double Density (Box of 10) also available. \$14.



## Bridge 6.0

Bridge 6.0 is a comprehensive contract or duplicate bridge - playing program which allows you and your computer partner to bid against two computer opponents and play out the hand. Ideal way for the novice to improve his or her game, and advanced player to get into a game without having to round up three additional players. (entertainment) \$24.





# GUARANTEE

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.

# OVERNIGHT DELIVERY ONLY \$3.00



**Metro ImageBase Electronic Art (Metro ImageBase)**  
High quality 300 dpi electronic art from one of the world's leading publishers of ready to use art. Enhance brochures, menus, reports, newsletters and presentations. One large image per file - 100 per package. Packages available: Newsletter Maker, Business Graphics, Computers & Technology, ReportMaker, Borders & Boxes and 9 others. (graphics) **\$76. ea.**

**XOR/PCAI**  
Lunar Rescue or MacGolf 2.0 ..... 34.  
MacGolf Classic ..... 53.  
Road Racer ..... 39.  
NFL Challenge ..... 54.

## Fonts

**Adobe**  
Adobe Type Manager ..... 56.  
ATM Plus Pack ..... 109.  
Fonts (full line avail.) ..... Call.  
Forms and Schedules ..... 279.  
Newsletters ..... 229.  
Presentations ..... 279.  
Textures, Fills, and Patterns ..... 129.  
**Altsys**  
Fontastic Plus 2.02 ..... 52.  
Metamorphosis ..... Call.  
The Art Importer 2.0 ..... 89.  
**Emerald City Software**  
TypeAlign ..... 60.  
**Letraset**  
LetraStudio ..... 275.  
LetraFonts (various) ..... ea. 69.  
**Tactic Software**  
ArtFonts Vol.1, 2 or 3 ..... ea. 55.  
**Orange Micro**  
Alphabits ..... 69.

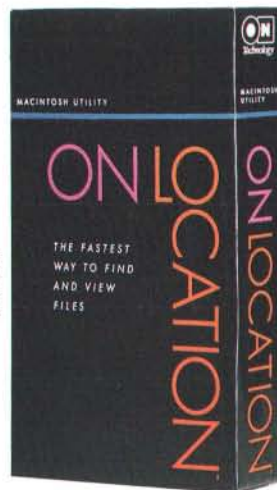
**On Location (ON Technology)**  
There's no more need to be a super sleuth in order to find and view elusive files - with On Location it's elementary! Find a file by typing words it contains or any part of its name. Then instantly view the file with its original fonts and word-processing commands. Move copy, rename or delete files and more! (utility) **\$75.**

## Graphics & Design

**3G Graphics**  
Images w/Impact  
Graphics & Symbols 1 ..... 52.  
Business 1 ..... 65.  
Accents & Borders 1 ..... 65.  
**Adobe**  
Illustrator 88 1.9.3 ..... 279.  
Photoshop ..... 539.  
Streamline ..... 229.  
Type Set 1 ..... 59.  
Type Set 2 ..... 59.  
**Aldus**  
Freehand 2.0 ..... 339.  
**Aperture Technology**  
Aperture Visual Information Mgr. .... 729.  
**Broderbund**  
Drawing Table ..... 75.  
TypeStyler ..... 119.

**MacEnvelope 4.1 and MacEnvelope Plus (Synex)**  
Envelope and Label printing in one package! MacEnvelope 4.1 combines all of the features of envelope and label printing in one easy-to-use package. Import up to 1600 addresses per file. Unique Postal Bar Coding speeds delivery and saves money on postage (for bulk mailers). Over fifty preformatted ready-to use label and envelope styles. Create/save layouts, print graphics, messages, fonts and color. **\$79.**  
**MacEnvelope Plus** saves up to 100,000 addresses per file. Provides list management features such as comments, flags, multi-level sorting and print range. (business) **\$149.**

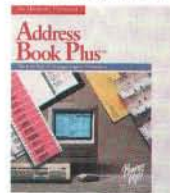
**Casady & Greene**  
Vivid Impressions Vol. 1 ..... 67.  
**Claris**  
MacDraw II ..... 295.  
MacPaint 2.0 ..... 95.  
**Cricket (Computer Associates)**  
Cricket Color Paint ..... 179.  
Cricket Draw ..... 139.  
**Deneba**  
Canvas 2.1 ..... 189.  
Ultra Paint ..... 125.  
**Digital Vision**  
Computer Eyes B&W ..... 209.  
Computer Eyes Pro Color ..... 349.  
**Dream Maker**  
Cliptures, Business Images ..... 69.  
MacGallery ..... 27.  
**Electronic Arts**  
Studio/1 ..... 96.  
Studio/8 ..... 296.  
**Graphsoft**  
Blueprint ..... 349.  
**Innovative Data Design**  
Dreams ..... 325.  
**MacroMind**  
MacroMind Accelerator ..... 129.  
MacroMind Director ..... 445.  
VideoWorks II ..... 175.



**Omni 5 (Blyth)**  
Omni 5 utilizes the graphical interface, enhanced memory, storage and color capabilities for both the Macintosh and IBM PS/2 hardware. It is designed to produce data files that can be shared between the Macintosh and IBM PC. Multi-user capabilities give simultaneous data access from both platforms. CL/1 and SQL connectivity allows Omni 5 to access data from the VAX or IBM mainframe. HyperCard access is fully supported by Omni 5. Included is Omni 5 Express which allows the beginner to outline requirements of an application and build their first applications. (database) **\$375.**



**Utility Pac**  
Give Your Mouse a House! Save valuable desktop space. Store your Mouse, Mouse Pad and Diskettes conveniently on the side of any monitor. Platinum color. (accessories) **\$11.**  
**HardTops**  
You'll flip your lid over these durable covers! Protect keyboards from unexpected spills and falling objects with impact-resistant ABS plastic. By Basic Needs. Platinum color. (accessories) Starting at **\$15.**



**Address Book Plus**  
The most complete, ready-to-use solution for managing names, addresses, phone numbers, and other vital information. The program makes it easy to print top quality address book pages, phone lists, mailing labels, rotary-file cards, and envelopes. Also includes a separate Desk Accessory for searching and dialing. (business) **\$53.** With leather binder **\$99.**



**Kraft Premium III Joystick**  
The button placement ensures fast action and comfortable use. Precision gimbals and dual-axis fine-tuners, give complete control over its operation. Connects to the ADB port of the Mac SE or Mac II (input/output) **\$49.**

## Entertainment

**Access Software, Inc.**  
World Class Leader Board ..... 27.  
**Artworx**  
Bridge 6.0 ..... 24.  
Daily Double Horse Racing ..... 19.  
GrailQuest ..... 19.  
**Broderbund**  
Ancient Art of War At Sea ..... 27.  
Shufflepuck Cafe ..... 24.  
Where in the World is Carmen ..... 27.  
**Bull City Software**  
Moriarity's Revenge ..... 36.  
**Bullseye**  
Ferrari Grand Prix or P51 ..... ea 32.  
Fokker Tri-plane ..... 24.  
**Centron Software, Inc.**  
BlackJack or CrapsMaster ..... ea 27.  
CasinoMaster (5 pack) ..... 49.  
**Discovery Software**  
Arkanoïd ..... 26.  
**Electronic Arts**  
Chuck Yeager Adv. Flight Trainer ..... 32.  
**Miles Computing**  
Foof's Errand ..... 32.  
Puzzle Gallery ..... 27.  
**Mindscape**  
Balance of Power, Deja Vu ..... ea. 29.  
Hostage ..... 29.  
The Colony or Gauntlet ..... 29.  
**Nemesis**  
Go Master ..... 49.  
Joseki Tutor ..... 30.  
**Softstream**  
22nd Street Whist Tutor ..... 32.  
MacRummy ..... 32.  
**Spectrum HoloByte**  
Falcon 2.0 ..... 31.  
Tetris color version ..... 22.  
**Springboard**  
Hidden Agenda ..... 22.  
**Studio Zero**  
Orbital Mech ..... 29.  
**The Software Toolworks**  
ChessMaster 2100 ..... 32.  
Cribbage & Gin King ..... 32.  
Life & Death ..... 32.  
The Hunt for Red October ..... 32.





# MacWAREHOUSE 1-800-255-6227



## Mac 101 Keyboards (DataDesk International)

Features 101 keys including a numeric keypad, a separate T-shaped cursor keypad, Cancel Key, Option and Command keys at both ends, definable function keys, plus scrolling, page control, and zooming keys. Manufacturer's two year warranty. (input/output) **\$139**. International Versions also available.



## MacTilt

See eye to eye with your Mac and watch productivity soar! Raise your Mac to eye level using MacTilt's 4 inch pedestal. Then tilt it up to 30 degrees and rotate it a full 360 degrees to make glare, eye, neck and back strain disappear like magic. (accessories) **\$68**.



## Endeavour Planner

Endeavour Planner puts you in charge of complicated projects. Its easy to use GANTT chart display lets you point, click and drag on any item. Each project can have its own calendar. You can adjust schedules midstream when conditions change, or lock in fixed deadlines. (business) **\$95**.



## LapLink Mac III

Share Mac Brain Power! - Transfer/translate files easily. **\$81**.

**LapLink Connectivity Pac** - Includes cable/software for Mac-to-Mac/PC-to-Mac link-up. (2 Users) **\$114**.

**LapLink Network Pac** - Link up to five Macs on an AppleTalk network. Both include hard disk password security, modem connections, split screen & more. (5 Users) **\$189**. (communications)

## Metro ImageBase (Full Line Available)

Art Deco or ReportMaker ..... ea. 76.

Newsletter Maker or Business ..... ea. 76.

**Mindscape**

ZING ..... 125.

**Multi Ad Services**

Multi-Ad Creator ..... 865.

ProArt: Bus., Sports or Holidays ..... ea. 95.

**Paracomp**

ModelShop ..... 379.

Swivel 3D 1.1 ..... 299.

**Silicon Beach**

Digital Darkroom ..... 249.

Super 3D 2.0 ..... 315.

SuperPaint 2.0 ..... 125.

**Strata**

StrataVISION 3d ..... 375.

**Strategic Mapping, Inc. (Select Micro)**

Map Maker 4.0 ..... 245.



## SuperMac

PixelPaint 2.0 ..... 225.

PixelPaint Professional ..... 389.

**Tactic Software**

Art Clips Vol. 1 ..... 51.

Art Clips Vol. 2 ..... 65.

**Zedcor**

Deskpaint 2.0 ..... 64.

## HARDWARE & PERIPHERALS

### Cutting Edge

Two Page 19" Monochrome Monitor 959.

**DEST**

Dest PC Scan Plus ..... **SPECIAL 699**.

**General Computing Company**

WriteMove Ink Jet Printer ..... 575.

**Magnavox**

Color Monitor 14" ..... 535.

**Microtek**

Microtek MSF-300GS Scanner ..... 1589.

**Mobius**

Multiscreen Video Card w/ Princeton 15" monitor ..... 529.

**Qume**

Crystal Print Publisher ..... 2900.

**Seikosha America**

Seikosha Printer (dot-matrix) ..... 235.

**Sharp**

The Wizard ..... 229.

**ThunderWare**

LightningScan ..... 369.

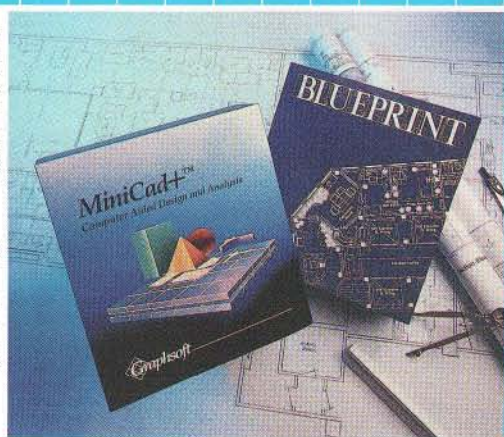
ThunderScan 5.0 ..... 187.

## MiniCad+ 2.0 (Graphsoft)

This year MiniCad+ is the people's choice, winning both the U.S. and Australian MacWorld World Class Awards for CAD. For the price of most 2D CAD packages, MiniCad+ provides 2D, 3D, a hotlinked spreadsheet and a programming language. The quality is unsurpassed. (cad/cae) **\$519**

## Blueprint

This new professional-level 2D CAD program has it all at an unbelievable price. Layers, fillets, DXF, constraint palette, high precision, auto-dimensioning, hatching, symbol library, encapsulated postscript plus more. (graphics) **\$349**.



## HYPERWARE

### Bantam

Complete HyperCard Handbook ..... 22.

**Beacon Technologies**

HyperBible International Version ..... 175.

HyperBible King James Version ..... 145.

**BrainPower**

ArchiText ..... 199.

**Bright Star Technology**

HyperAnimator 1.5.1 ..... 98.

**interFACE**

DataDesk International ..... 229.

**HyperDialer**

HyperDialer ..... 29.

## SmartOne 2400 Modem (Best Data Products)

For beginners and experienced modem users. If you need a 2400 baud modem, the Smart One 2400 Modem provides an economical alternative. For less than the cost of some 1200 bps units, you get a Hayes compatible modem with and auto answer/originate, 300, 1200 and 2400 baud operation, pass-through phone jack, speaker with programmable

volume, and a manufacturer's two-year warranty. All user options are stored in non-volatile memory. Includes software and cable. (modems) **\$145**.

## ICOM Simulations

HyperTMON ..... 59.

**MicroMaps**

HyperAtlas ..... 59.

**Power Up**

HyperTutor ..... 29.

**Silicon Beach**

SuperCard ..... 125.

**Softstream International**

HyperHit ..... 125.

**Springboard**

Family Matters ..... 28.

**Symmetry**

HyperDA 1.2 ..... 49.

**TimeWorks**

HyperWorks Organizer ..... 57.

## INPUT/OUTPUT

### Altra

Felix ..... 127.

**Asher Engineering**

QuadLYNX Trackball ..... 59.

**Cutting Edge**

CE-105 ADB Keyboard ..... 125.

**DataDesk Intl.**

Mac 101 Keyboards ..... 139.

International versions ..... Call.

**Kensington**

New Turbo Mouse ..... 109.

## Koala

MacVision 2.0 ..... 219.

**Kraft**

ADB Joystick Premium III (SE&II) ..... 49.

QuickStick ..... 39.

Trackball ..... 79.

**Kurta**

IS/ADB Tablet 8 1/2 x 11 ..... 255.

**Micro Touch**

The UnMouse ..... 189.

**Mobius**

Cordless Mouse ..... 99.

**Mouse Systems**

A+ Mouse (SE/II) ..... 79.

A+ Mouse (512/Plus) ..... 59.

**Practical Solutions**

The Cordless Mouse ..... 99.

Mouse Master ..... 57.

**Summagraphics**

Bit Pad Plus ..... 319.

## LANGUAGES

### Digital, Inc.

Smalltalk/V MAC ..... 125.

**Microsoft**

QuickBasic ..... 65.

**Shana Corporation**

Inside Out ..... 369.

**SmethersBarnes**

Prototyper ..... 189.

**Symantec**

THINK'S C 4.0 ..... 165.

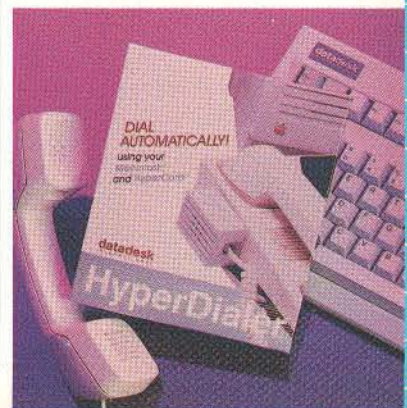
THINK'S Lightspeed Pascal ..... 105.

**Zedcor**

ZBasic 5.0 ..... 89.

## HyperDialer (DataDesk International)

Now you can connect your Macintosh to your existing business or home telephone for automatic dialing with Apple's HyperCard. DataDesk's HyperDialer is designed specifically for HyperCard's touch-tone dialing capabilities and works with line business phones without requiring a modem or dedicated phone line for automatic dialing. Automatically dials HyperCard, SideKick, Focal Point, C.A.T., SuperCard and QuickDex phone numbers. It connects to Mac's speaker port - not a precious serial port. (hyperware) **\$29**.





**OVERNIGHT DELIVERY**  
**ONLY \$3.00**  
 (See details below)

**GUARANTEE**

Many of our products come with a thirty day money back guarantee, if you are not completely satisfied. Ask for details when you place your order.

**UltraPaint (Deneba Software)**

Michelangelo would turn Veronese green with envy! Combines B&W/color painting, gray scale image processing and object-oriented drawing. Supports 256 colors, a multi-color airbrush, editable mask & lasso, a water droplet tool and more. It's Open Architecture design makes adding features easy. (graphics) **\$125.**

**Canvas 2.1** Unleash your creativity! Version 2.1, faster and more versatile than before, offers an unlimited number of object layers and full 16.7 million color support (256 colors per palette). Also offers enhanced Bezier curves, 100,000 word spell checker, improved alignment manager, a four-color process separations utility, and more. Directly import MacDraw II and export EPS formatted files. (graphics) **\$189.**

<b>Supra</b>	
Supra Modem 2400 .....	129.
<b>US Robotics</b>	
Courier 9600 Modem .....	689.

**MacGolf Classic (XOR Corp.)**

You won't be in the rough when you play MacGolf. This premium edition of MacGolf features vivid full-screen color graphics with unsurpassed screen image detail. Contains the original 2 MacGolf courses and 4 additional MacCourses, for a total of 108 holes to play. New features include 5 enlargement options for close-up viewing, 9 practice greens, a driving range, installability on hard disks and much more. Works with Plus, SE, II and IIfx. (enter.) **\$53.**

<b>HIP Software</b>	
Harmony Grid .....	59.
<b>Intelligent Music</b>	
OvalTune .....	95.
<b>Passport Designs</b>	
NoteWriter .....	325.
Passport MIDI Interface .....	89.
<b>Primera Software</b>	
Different Drummer .....	59.
<b>Repertoire</b>	
Music Publisher .....	359.
<b>Resonate</b>	
Listen 2.0 .....	62.
<b>Tactic Software</b>	
Sound Clips Vol. 1 or 2 .....	ea. 49.

**MEMORY UPGRADES/ACCELERATORS**

**1 MEG SIMMS**

Low Profile, 120ns High Quality Single In-Line Memory Modules for MacPlus, SE, II, IIfx. 2 yr. Warranty. **New low price \$89.**

**Dove (full line available)**

MaraThon 030 Accelerator .....	969.
MaraThon 030X .....	969.
MaraThon Racer .....	149.
MacSnap 2S .....	199.
MacSnap 4S .....	395.
MacSnap 8S .....	818.
MacSnap 524E .....	185.
MacSnap 524S .....	239.
MacSnap 548S .....	499.

**MODEMS/FAX**

<b>Abaton</b>	
InterFax12/48 .....	265.
InterFax 24/96 .....	425.
<b>Best Data Products</b>	
SmartOne 2400/1200 .....	145.
<b>Hayes</b>	
Smartmodem 1200 .....	295.
Smartmodem 2400 .....	429.
Smartmodem 9600 (V series) .....	759.
<b>Prometheus</b>	
ProModem 2400 SE Int. ....	209.
ProModem 2400M .....	199.
Travel Modem .....	205.



**PixelPaint Professional 2.0 (SuperMac Technology)**

PixelPaint Professional's photo-realistic paint capabilities let your imagination tinker with reality. Don't settle for manipulating images...create them with PixelPaint Professional! Offers an array of advanced paint tools for dazzling special effects. Choose from full transparency control, dynamic masking, image merging and a sophisticated airbrush tool. Use 8-to-32 bit color while selecting from a spectrum of custom

palettes and color pickers including 4-color process, RGB, and PANTONE. (graphics) **\$389.**

**MUSIC AND SOUND**

<b>Altech</b>	
MIDI Interface .....	59.
<b>Bogas Productions</b>	
Super Studio Session 2.0 .....	65.
<b>Coda</b>	
Finale .....	589.
MacDrums .....	31.
Perceive .....	49.
<b>Electronic Arts</b>	
Deluxe Music Construction 2.5 .....	85.
Deluxe Recorder .....	99.
<b>Esthetic Engineering</b>	
Music Mouse .....	49.
<b>Farallon Computing</b>	
MacRecorder (records sound) .....	164.
Screen Recorder .....	125.
<b>First Byte</b>	
SmoothTalker .....	33.
<b>Great Wave</b>	
Concertware+MIDI 5.0 .....	99.

**HyperBible (Beacon Technology)**

Old and New Testament Bible quotations are easily accessed and brought to life with this amazing Bible study system. Use HyperBible's extensive historical data to trace the development of people and places described. 15MB hard disk space required. Includes HyperCard 1.2.2. (hyperware) New Int'l. Version **\$175.** King James Version **\$145.**

**Gems of the Word**

These Little Gems are Priceless! Put your day into perspective with up to 2,000 inspirational Bible verses. Covers over 150 topics. Gem of the Day program offers a new verse each day. 800k. (educational/personal) **\$25.**

**SECURITY & VIRUS PROTECTION**

<b>ASD Software, Inc.</b>	
FileGuard .....	125.
FileGuard Extend (office 5-pak) .....	309.
<b>TWINS</b>	
Fifth Generation .....	109.
Disk Lock .....	107.
<b>Kent Marsh</b>	
MacSafe II .....	107.
NightWatch .....	86.
QuickLock .....	56.
<b>Mainstay</b>	
AntiToxin .....	59.
<b>Microcom</b>	
Virex 2.2 .....	52.
<b>Symantec Corporation</b>	
S. A. M. ....	69.

**SPELLING/DICTIONARY THESAURUS CHECKERS**

<b>Deneba Software</b>	
BigThesaurus .....	59.
Spelling Coach Pro 3.1 .....	125.
<b>Electronic Arts</b>	
Thunder II .....	49.
<b>Lexpertise</b>	
MacProof 3.2.1 .....	115.
<b>Microlytics</b>	
Electronic Word Finder .....	69.
Word Finder 2.0 .....	34.
<b>Sensible Software</b>	
BookEnds .....	53.
Sensible Grammar .....	51.

**STATISTICAL ANALYSIS**

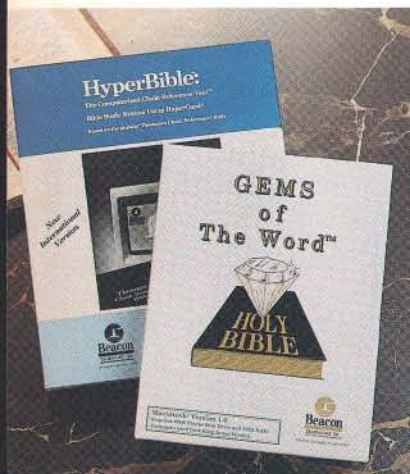
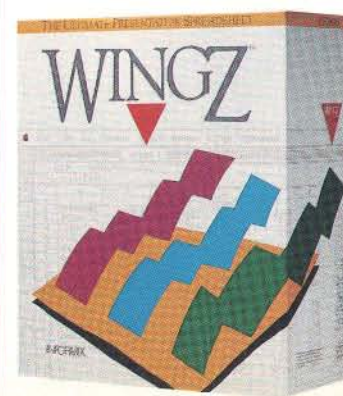
<b>Abacus Concepts</b>	
StatView II .....	285.
StatView SE+Graphics .....	199.
<b>BrainPower</b>	
StatView 512+ (requires 512k) .....	149.
<b>D2 Software</b>	
MacSpin 2.0 .....	189.
<b>Odesta</b>	
Data Desk 3.0 .....	349.
<b>Paracomp</b>	
Milo .....	159.
<b>Select Micro Systems, Inc.</b>	
Exstatix .....	219.
<b>Wolfram Research</b>	
Mathematica (SE) .....	450.

**UTILITIES**

<b>Abbott Systems</b>	
CanOpener 1.1 .....	65.
<b>Affinity</b>	
Tempo II .....	75.
<b>Aladdin Systems Inc.</b>	
Programmer's Assistants .....	75.
Shortcut .....	46.

**WingZ 1.1 (Informix Software)**

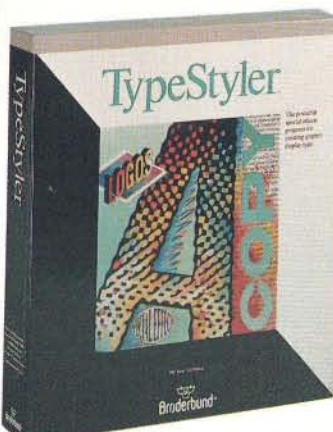
With WingZ, the largest, fastest and most versatile spreadsheet for any Macintosh—you can combine numbers, words and graphs on a single page. Ver. 1.1 of WingZ has completely new documentation including a 525-page HyperScript volume, new features, enhanced 3-D graphs, expanded capabilities in WingZ HyperScript development language and much more. (business) **\$249.**





# CompuServe™

You can now contact MacWAREHOUSE or place orders with us in **Electronic Mail** on CompuServe. The **MacWAREHOUSE GO code 0 MW**. As always, you'll get fast, dependable overnight service and you can leave messages for Kerry or any of our support staff.



## TypeStyler (Broderbund)

Take an ordinary message - then bend it, shape it, anyway you want it! With TypeStyler you'll create dramatic graphics without expensive typesetting. Type it - then Style it using an array of unique paint features. Feel free to import and export PICT, Paint and EPS file formats, export Adobe Illustrator outlines and more. TypeStyler comes with 10 AGFA Compugraphic typefaces and works with thousands of fonts including Type 1 from Adobe. Next time say it with style... Say It With TypeStyler! (graphics) **\$119.**

## ALSoft

DiskExpress II ..... Call.  
Font/DA Juggler ..... 42.  
MultiDisk ..... 49.  
Master Juggler ..... 64.

## Berkeley System Design, Inc.

Stepping Out II ..... 50.

## CE Software

DiskTop 4.0 ..... 64.

QuickKeys 1.2 ..... 64.

Caere ..... 549.

## Central Point Software

Copy II Mac ..... 24.

Mac Tools ..... 45.

## Custom Applications

Freedom of Press 2.1a ..... 265.

## Dantz Development

Retrospect ..... 152.

## Dayna Communications

DOS Mounter ..... 55.

## Emerald City Software

Lasertalk 1.0 ..... 149.

## Fifth Generation

FastBack II ..... 107.

PowerStation 2.5 ..... 34.

Pyro ..... 14.

Suitcase II ..... 44.

## GO Technology

MacTree Plus ..... 46.

## ICOM Simulations

On Cue ..... 35.

## Insight Development

MacPrint ..... 95.

## Magic Software

AutoSave II ..... 29.

BackMatic ..... 50.

POWERicons or POWERmenus ea. .... 39.

## Mainstay

Capture 2.0 ..... 49.

## Microlytics

GOfer ..... 45.

## Olduvai

ClipShare ..... 139.

MultiClip ..... 50.

## ON Technology

On Location ..... 75.

## PCPC

HFS Backup 3.0 ..... 54.

## Peripheral Land, Inc.

TurboBack ..... 55.

TurboCache or Turbo Spool ..... ea. 69.

TurboOptimizer ..... 39.

## Preferred Publishers

Exposure ..... 52.

## Software Innovations

HandOff ..... 32.

## SuperMac

DiskFit 1.5 or SuperSpool 5.0 ..... 58.

Sentinel 2.2 ..... 87.

SuperLaserSpool 2.0 (single user) .... 87.

Super LaserSpool (5-pack) ..... 289.

## Symantec Corporation

SUM II ..... 99.

## Tactic Software

FontShare 2.0 ..... 149.

Icon-It 2.0 ..... 39.

## Williams & Macias

DiskFinder ..... 27.

myDiskLabeler ..... 33.

StickyBusiness 1.07 ..... 89.

## XTree Company

XTree Mac ..... 52.

## WORD PROCESSORS & OUTLINERS

## Ashton-Tate

FullWrite Professional ..... 259.

## Claris

MacWrite II ..... 169.

## DeltaPoint, Inc.

MindWrite 2.1 ..... 95.



## Read-It! OCR 2.1 (Olduvai)

Use any scanner to input pages of text as graphics. Then Read It! works interpreting those graphic images as ASCII characters. Handles forms filled in by typewriter, which can speed up many typical office operations. For every typeface, you'll have to teach it the alphabet, and afterwards, you'll want to run the output through a spelling checker. But think of the time you'll save when you don't have to type bulk text into your Mac. (desktop publishing) **\$245.**

## Microsoft

Word 4.0 ..... 249.

## New Horizons Software

WordMaker ..... 65.

## Niles & Associates

End Note ..... 75.

## Symmetry

Acta Advantage w/DA ..... 65.

## T/Maker

WriteNow 2.0 ..... 119.

## WordPerfect Corp.

WordPerfect ..... 229.

## Working Software

QuickLetter ..... 73.

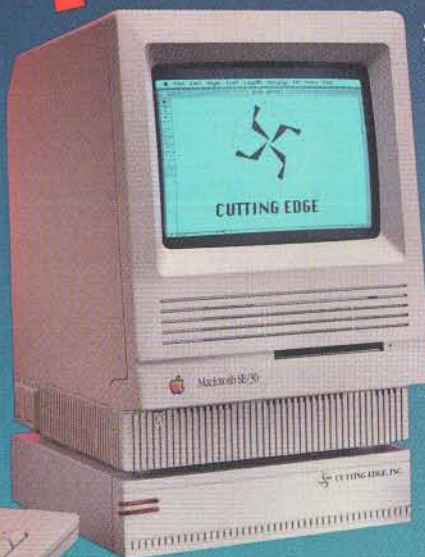
# STOP PRESS

## NEW!

## Price breakthrough! Under the Mac Drives (Cutting Edge)

The Cutting Edge Under the Mac hard disk drives are quiet and reliable with access times down to 20 ms making it almost three times faster than most. Push button external SCSI address switch and removable SCSI terminators allow easy daisy chaining up to 7 SCSI devices. Sizes available 20 meg to 80 meg (see line listings)

**20 meg only \$359.**  
**30+ meg only \$439.**  
**45+ meg only \$499.**  
**60+ meg only \$599.**  
**80+ meg only \$659.**



## 800K Drive

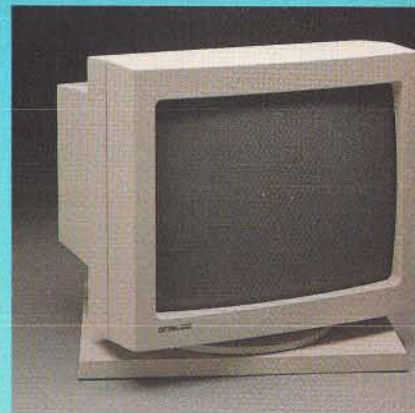
The Cutting Edge 800K Drive's attractive styling, quiet performance, and high-tech reliability make it our most popular floppy drive.

Features an LED light to indicate disk access and a hinged door over the disk insertion slot to keep the mechanism clean. One year manufacturer's warranty. (disk drives) **\$149.**



## Two Page 19" Monochrome Monitor (Cutting Edge)

Every Mac SE and II user can now justify the expense of a big screen with the new Cutting Edge 19" Two Page Monochrome Display System. The Cutting Edge Monitor includes the interface card and matches just about all the features of other big screen display systems costing twice as much. It has a flicker-free refresh rate of 70 hz and a high resolution of 72 DPI. Like all Cutting Edge products it comes with a one year warranty and a 30 day money back guarantee. Please specify your Mac model. (hardware) **\$959.**



I'm Donna, call me at

# MacWAREHOUSE™

## 1-800-255-6227

Inquiries: 201-367-0440

FAX: 201-905-9279

**ORDER TOLL-FREE**

**24 HOURS A DAY.**

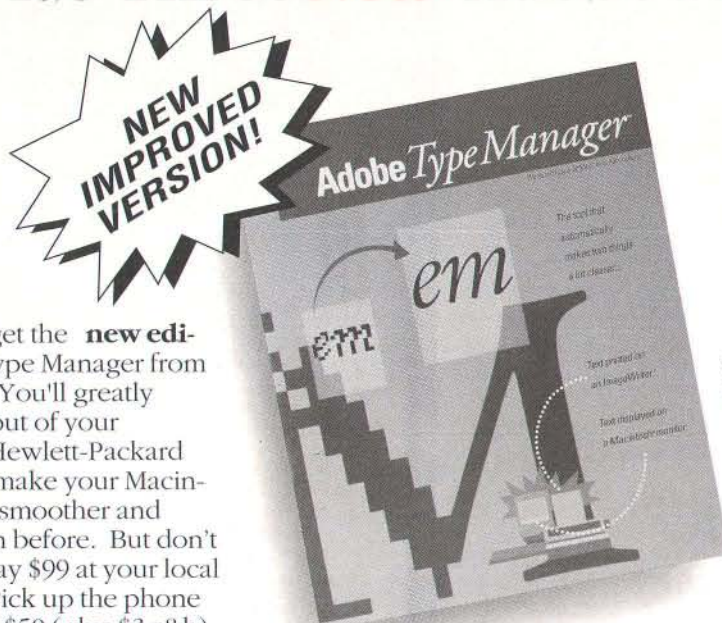


**CONTEST RULES 1.** Entries must be received on or before 4/30/90. **2.** Winners selected in random drawings by attorneys for MicroWarehouse Inc. (MWH), whose decisions are final. **3.** Mac Portable Computer prize subject to availability. MWH reserves the right to substitute wholesale cash value up to \$6,000. **4.** Winners responsible for taxes. **5.** Odds of winning depend on number of entries. All prizes will be awarded. **6.** MWH will announce the winners on or around 5/31/90. Winners notified by mail. Dates subject to change at the discretion of MWH. If unable to contact any winner, an alternate will be selected by random drawing. **7.** Contest is open to US residents, except where prohibited by law. Employees of MWH and suppliers not eligible. **8.** Prizes - one Mac Portable Computer w/40MB hard disk and 150 software and media prizes.

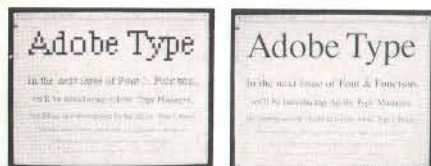


# Introducing the New, Improved Adobe Type Manager \$59.

Plus Three **New** Adobe Products\*!



Now you can get the **new edition** of Adobe Type Manager from MacWarehouse. You'll greatly improve the output of your ImageWriter or Hewlett-Packard DeskWriter and make your Macintosh display text smoother and more legible than before. But don't stand in line to pay \$99 at your local software store. Pick up the phone now, and for just \$59 (plus \$3 s&h), we'll rush your copy by overnight delivery!

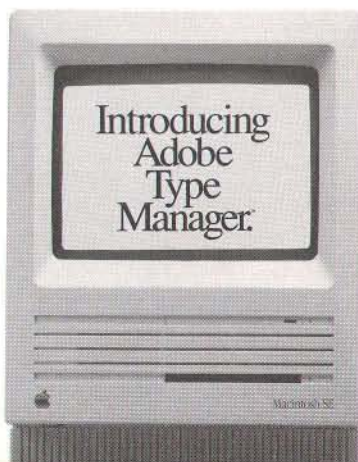


Believe it or not, Adobe Type Manager solves the problem of jagged edges on screen fonts, too. Now, what you see on your screen will more closely resemble what you get from any PostScript printer — no more 24-point headlines that look like brick piles on screen. It's almost like having Display PostScript on your Mac — for only \$59.

Adobe Type Manager is compatible with virtually every major application, and it's easy to install on any Mac (running System 6 or later) from a Plus to a IIci. Just a few clicks with your mouse — install it and forget it. Because you'll only need one size of a screen font installed in your System, you can also

save megabytes of space on your hard disk. You won't need any additional memory, either.

If you have a non-PostScript laser printer, like Apple's LaserWriter IISC, Adobe Type Manager will give you PostScript - quality type, without the PostScript expense. And Type Manager includes high quality outline versions of 13 popular fonts, so it's easy to produce the kind of text you thought only came from a PostScript laser printer.



Our friendly MacWarehouse staff of Mac fanatics is standing by to help with any questions you may have. Remember, nobody beats our fast, dependable, overnight service for Adobe Type Manager or any of the other fine Adobe products.

## NEW!

■ **Adobe Plus Pack** — Contains 22 additional typefaces — Adobe Typeface Packages 1-5 and Helvetica Narrow. (These are not included with Adobe Type Manager.) The MacWAREHOUSE low price is just **\$109!**

■ **Adobe Type Set 1** — Contains 7 typefaces. The MacWAREHOUSE low price is just **\$59!**

■ **Adobe Type Set 2** — Contains 7 typefaces. The MacWAREHOUSE low price is just **\$59!**

ADOBE TYPE SET 1      ADOBE TYPE SET 2

**Hobo**  
**Bodoni**  
**Poster**  
*Freestyle Script*  
**VAG Rounded**  
**Bold**  
*Linotext*  
**COTTONWOOD**  
**TRAJAN**

**Peignot Demi**  
*Present Script*  
**Cooper Black**  
**Franklin Gothic**  
**No. 2 Roman**  
**COPPERPLATE**  
**GOthic 31AB**  
**LITHOS BOLD**  
**JUNIPER**

\*Designed for use with Adobe Type Manager — sold separately.

**MacWAREHOUSE™**  
**1-800-255-6227**

24 hours a day, 7 days a week.

Inquiries: 1-201-367-0440

Fax: 1-201-905-9279

© 1990 Micro Warehouse Inc.



connectors; some have a life rating of only 100 mating cycles.

I replaced the connectors in my Apple extended keyboard by simply removing the four screws on the bottom of the keyboard and then lifting off the top of the keyboard. The small printed circuit boards with the connectors mounted on them are then easily accessible.

Larry Junek  
Schertz, Texas

#### Quit the Finder

**TIP:** Having trouble using MultiFinder on a 1MB Mac, or just want to buy yourself a couple hundred K when using MultiFinder? It's easy—quit the Finder. The Finder doesn't have a Quit command, but using ResEdit you can designate an F-key (function key) that

acts like one. You use an F-key by pressing  $\text{⌘}$ -Shift and a number. For example,  $\text{⌘}$ -Shift-1 ejects a floppy disk.

Start by making a backup copy of the Finder (press Option while dragging the Finder icon from the System Folder to another folder or disk). Use ResEdit to open your copy of the Finder. Choose New from ResEdit's File menu. In the dialog box that appears, type in capital letters FKEY and click on OK. Again choose New from the File menu. In the window that opens, type A9F4. Next choose Get Info from ResEdit's File menu. In the dialog box that appears, change the number labeled ID to 0 or a number between 5 and 9. Quit ResEdit, answering Yes when it asks if you want to save changes to the Finder. Finally, open the System Folder, drag the

Finder from it to the desktop, and drag your modified copy of the Finder to the System Folder. (Your modified Finder must be named Finder.)

To use the F-key, you must first activate MultiFinder using the Finder's Set Startup command (located on the Special menu) and restart the Mac. Then Open any application or desk accessory, switch to the Finder, and press  $\text{⌘}$ -Shift together with the 1-digit number you assigned as the ID in ResEdit. Notice the disk and Trash icons disappear. Check the Apple menu—Finder is not open!

Peter Ford, George Weil, and  
Randy Zeitman  
Address unknown

You'll also need to quit the application you opened before quitting the Finder. Otherwise the regained memory can only be used to open an application that needs no more memory than the Finder. Normally the Finder uses 160K. You can increase that amount by changing the Application Memory Size option (using the Finder's Get Info command) and then restarting.

With no Finder, you'll need an alternate method of opening applications. On Cue from ICOM Simulations (312/520-4440) adds a customizable application menu to either end of the menu bar. DiskTop from CE Software (515/224-1995) is a DA with all the functionality of the Finder (and more) but with a different interface.

The latest version of ResEdit, 1.2 at this writing, is available with documentation from APDA (408/562-3910, 800/282-2732 in the U.S., 800/637-0029 in Canada.)—L.P. **M**

{Define the}	{gray scales—in}	{loop through each}
{variables needed}	{this case 16}	{Z axis division,}
{for the script}	DEFINE number	{assigning the}
		{next gray value}
{“chartnum” holds}	number = 16	{to that division}
{the number that}		FOR iterator =
{refers to the}	{turn repaint off}	1 TO number
{selected chart}	{so that the graph}	
DEFINE chartnum	{is not redrawn}	{calculate the}
	{after each}	{RGB values}
{“min” is the}	{command}	{needed for}
{default minimum}	REPAINT OFF	{this gray}
{value assigned}		{level}
{to the chart}	{get the number}	colorvalue =
DEFINE min	{of the selected}	iterator*255
	{chart}	/number
{“max” is the}	chartnum=NUMBER()	
{default maximum}		{select that}
{value assigned}	{select that}	{Z axis}
{to the chart}	{charts Z axis}	{division}
DEFINE max	SELECT CHART	SELECT CHART
	chartnum AXIS 3	chartnum
{“iterator” is}		SERIES
{the loop counter}	{get the present}	iterator
DEFINE iterator	{Z axis scaling}	
	min=SCALEMINIMUM()	{assign the}
{“colorvalue” is}	max=SCALEMAXIMUM()	{proper RGB}
{assigned to each}		{values}
{RGB component}	{set the Z axis}	FILL FG RGB
{to produce the}	{scaling and}	(colorvalue,
{smoothly varying}	{number of major}	colorvalue,
{grays}	{divisions}	colorvalue)
DEFINE colorvalue	MANUAL SCALING	
	FROM min TO max	{end loop}
{“number” is the}	WITH	END FOR
{number of Z axis}	number MAJOR AND	
{divisions and}	1 MINOR DIVISIONS	{now redraw the}
{corresponding}		{graph}
		REPAINT OBJECTS

#### Smooth Variations

This Wingz script smoothly shades a surface or contour graph. The script remaps the z axis to have 16 divisions, and makes each division a lighter shade of gray than the division below it.

.....  
We pay from \$25 to \$100 for tips published here. Send tips or questions (with your address and phone number) to *Quick Tips*, *Macworld*, 501 Second St., San Francisco, CA 94107. Send electronic mail to CompuServe (70370,702) or MCI Mail (addressed to 294-8078). All published submissions become the property of *Macworld*.

*Lon Poole answers readers' questions and selects their tips for this monthly column. He has written many personal computer books, most recently the quick reference guide HyperTalk (Microsoft Press, 1988), and has just finished a new book of Mac tips (to be published this summer by Microsoft Press), Amazing Mac Facts.*



# ITS SPEED IS FEROCIOUS. ITS VERSATILITY, UNPRECEDENTED. IT'S UTTERLY PRECISE, ASTONISHINGLY NIMBLE, & INCREDIBLY SMOOTH AT THE HELM. THE PLANE'S NOT TOO SHABBY EITHER.

MacUser



1989  
EDITORS'  
CHOICE  
AWARD  
WINNER

BEST  
GRAPHICS  
PROGRAM

It's no accident that the high performance of Canvas™ evokes images of a jet fighter in full flight.

Fact is, its technical drawing power renders Canvas remarkably adept at evoking almost any kind of image you could want.

Over time, this has served to render Canvas's competitors rather speechless. And its reviewers, just the opposite.

A quick tour of its amazing arsenal of weapons helps explain why all the commotion.

Advanced Bezier and spline curves with total editing control. 64,000 dpi accuracy. 16 million-plus colors. Custom rulers, dashed lines, and arrowhead styles. 1/1,000th inch hairlines. Auto object distribution and dimensioning of lines & arcs. Auto tracing of scanned art.

Press-ready 4-color (CMYK) separations, with precision screen angle adjustments and independent color overrides. Flexible EPSF export formats. Importing of MacDraw® I or II files. Smooth text handling and

a 100,000 word onboard spell checker.

The list just goes on. And on. And on.

Yet despite all this technical prowess, Canvas has earned consistent applause for its intuitive design & ease of use.

And, perhaps best of all, for its list price of under \$300.

So, if you're looking for a lot more thrill and a lot less limitation, look into Canvas.

By any measure, it's the only way to fly.

## TRADE UP FOR JUST \$99.

It's also no accident that Canvas reads MacDraw® files. We like to think of this as a no-loss invitation to greatness. Simply mail your MacDraw® I or II Master Disk and \$99 (check or full credit card info) to Deneba Software, 3305 N.W. 74th Ave., Miami, FL 33122. Offer expires 5/31/90.

For additional information or the name of your nearest dealer call 1 (800) 6-CANVAS or (305) 594-6965.

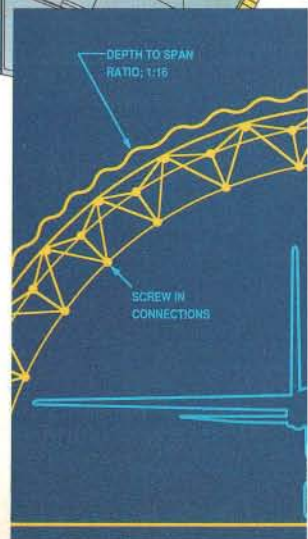
©1990 Deneba Systems, Inc. Canvas™ is a trademark of Deneba Systems, Inc., MacDraw® is a registered trademark of Claris Corporation.

All illustrations were created in Canvas and separated by the Canvas Separator.™

# CANVAS™

PRECISION DRAWING POWER FROM  
Deneba SOFTWARE

Circle 346 on reader service card







# Getting Started with Memory

HOW MEMORY WORKS, AND HOW TO MAKE IT WORK BETTER FOR YOU

BY JIM HEID

In 1946 at a lecture at the Los Alamos National Laboratory, a mathematician named John von Neumann presented his vision of future computers: they would contain internal storage space for holding the results of calculations until the data

could be permanently stored on punched cards. This temporary work space, which he called *internal memory*, would also allow a computer to hold sequences of instructions, eliminating the need to rewire the machine to perform a different type of calculation. Yes, in that computer Stone Age, to run a different program, you got out your wire cutters.

Since those early days memory has evolved from room-size circuits that could store a sentence to fingernail-size chips that can store a book. And someone reading this 20 years from now will probably chuckle at my quaint descriptions of today's memory. But it's likely that memory will still serve the same basic role: storing the programs we use and the data we create. This month, I'll look at this role as it applies to the Mac, and I'll describe ways to use memory to improve the Mac's performance.

## Memory Minutiae

There are many types of memory, but most fall into either of two broad categories: *ROM* and *RAM*. You can't venture into the Mac world without encountering these two acronyms, so it helps to understand the concepts behind them.

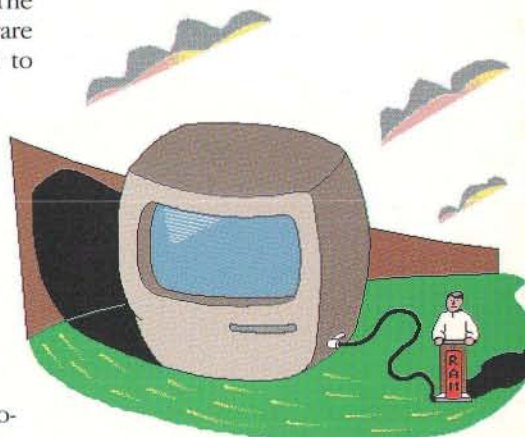
ROM stands for *read-only memory*: the Mac can read the contents of a ROM chip, but it can't change them. A ROM chip's software is in there for good, frozen at the factory like the grooves on a phonograph album. The only real threat it faces is an electrical mishap such as a power surge or a spark of static electricity.

In the Mac, ROM chips store portions of the fundamental *system software* that enables the Mac to run. The Mac's ROM contains small software routines that applications call on to create pull-down menus, dialog boxes, and the other visual elements of the Mac's interface. (These routines are often collectively described as the *Toolbox*.) ROM also stores small diagnostic routines that swing into action when you switch the Mac on, testing its hardware for problems and then displaying the familiar where's-the-disk? icon.

If a ROM chip is like a phonograph album, a RAM chip is like a cassette tape or a disk—it's initially blank, and its contents can be changed over and over again. RAM stands for *random-access memory*. Because it can be written to as well as read from, it's sometimes called *read-write memory*.

RAM is versatile but vulnerable. Cassettes and disks store information using magnetic particles oriented in patterns that remain intact until another magnetic field comes along to change them. A RAM chip, on the other hand, uses millions of microscopic electronic switches that stay in place only as long as the chips have a steady, reliable supply of power. That's why programs have Save commands—and why it's a good idea to use them often.

Incidentally, RAM chips are often referred to as *DRAM* (pronounced *dee-RAM*) chips. *D* is for *dynamic* and reflects the chip's need for a periodic electronic nudging, or *refresh signal*, that allows it



to retain its contents. The other major type of RAM chip, *static RAM*, doesn't require a refresh signal and therefore uses less power. That's one reason Apple used (continues)



static RAM in the Mac Portable. But static RAM chips are more expensive than their dynamic counterparts; as a result, most deskbound computers use DRAM chips.

The RAM chips used in deskbound Macs are connected in groups of eight on small plug-in circuit boards called *Single Inline Memory Modules*, or *SIMMs*. (The Mac Portable uses its own specialized memory boards, and in the discontinued 128K and 512K Macs, RAM chips are connected directly to the computer's main circuit board.) In their least-expensive configuration, all currently manufactured Macs include 1 megabyte (MB) of RAM. One megabyte was a vast expanse in John von Neumann's computing world, but as we'll see shortly, today it's barely enough.

"Coming to Terms with Memory" defines the most common memory-related terms. For details on choosing and installing specific upgrades, see "Is Your Mac Obsolete?" (February 1990).

### Cramped RAM

The Mac's RAM and ROM chips work together—ROM supplies the carved-in-stone software that helps the Mac run, and RAM provides the storage space to hold, well, everything else. You might think the Mac's RAM holds only applications and their documents. Not so. RAM is like a shared closet—it's crammed with odds and ends that reduce the amount of space left over for your stuff. These odds and ends include the following.

- *RAM-based system software*

Some of the Mac's system software isn't frozen in ROM but is instead loaded from disk during start-up. Apple omitted some of this RAM-based software from ROM in the interest of flexibility. (For example, if the Finder was in ROM, Apple couldn't release updated versions of it without requiring everyone to buy new ROM chips.)

Other RAM-based system routines bypass older ROM-based ones. Many ROM routines are designed to be replaced by newer ones, called *patches*, that load into RAM during start-up. A patch might fix a bug discovered in a ROM routine, or it might add new ROM-based features to an older Mac—for example, Apple's 32-bit QuickDraw software, which lets color Macs use

the latest color video hardware (see *Macworld News*, August 1989). The IIfx has 32-bit QuickDraw software in ROM, but other Mac IIs that don't have it need the patch. The price for this interface lift? About 80K of RAM.

- *Start-up documents (INITs)*

These ubiquitous programs load during start-up and let you customize keyboard shortcuts, exchange electronic mail, and more (see "Start with Utilities," *Macworld*, October 1989, and "Getting Started with Utilities," February 1990). They're an effective way to customize and enhance the Mac, but they take their toll on free RAM.

- *MultiFinder* System software that lets you run multiple programs simultaneously. It requires 160K of RAM—enough to accommodate an array of INITs or to help feed a memory-hungry program.

- *The RAM cache* This Control Panel option can boost performance, but it uses RAM to do so.

The upshot of all this is that a 1MB Mac doesn't have 1MB of *free* mem-

ory; instead, it has only 600K to 700K—less if you use MultiFinder or memory-consuming INITs such as network or electronic-mail software. If yours is a 1MB Mac, you'll need to do some careful tweaking to get acceptable performance, and you should choose programs that use memory sparingly. For survival strategies for 1MB machines, see "More for Your Memory," in this issue.

### Ramming Speed

By boosting the Mac's memory, you can take full advantage of MultiFinder's talents by running several programs at the same time and switching among them with a mouse click. You can also use extra memory to speed up the Mac's operation.

Extra memory can boost performance by reducing the need for the Mac to access both hard and floppy disks. When a program's code or data is stashed in memory instead of on disk, data transfers occur much faster than  
(continues)

## COMING TO TERMS WITH MEMORY

**Access Time** The time required, in nanoseconds (billionths of a second; abbreviated *ns*) to successfully read to or write from a RAM chip. Some Macs require faster RAM chips than others; the IIfx needs 80ns RAM chips, while the Plus and SE can use slower chips. (Some static RAM chips provide access times as fast as 25ns.) You can use chips with a faster access time than your Mac needs, but they won't speed up processing; the computer's circuitry is designed for chips with a specific access time.

**Bit** Short for *binary digit*, the smallest unit of computer storage. A bit can represent one of two states: 1 (on) or 0 (off).

**Byte** The workhorse of information storage, equal to 8 bits. One byte can represent any of 256 values, since its 8 bits can be on or off in 256 different combinations. A byte can represent a single character; for example, storing the alphabet requires 26 bytes.

**Density** The capacity, in bits (not bytes), of an individual RAM or ROM chip. The most common densities are 256 kilobits and 1 megabit. By tying RAM chips together in groups of eight, a SIMM board can store 256 kilobytes or 1 megabyte. A 1MB Mac contains four 256K SIMMs; a 4MB Mac has four 1MB SIMMs.

**Gigabyte** 1024 megabytes; abbreviated as *GB*.

**Kilobit** 1024 bits; abbreviated as *Kbit*. The capacities of individual RAM chips are measured in Kbits.




















**Kilobyte** 1024 bytes; abbreviated as *K*.

**Megabit** 1,048,576 bits; abbreviated as *Mbit*.

**Megabyte** 1024 kilobytes, or 1,048,576 bytes; abbreviated as *MB*.



# Picture yourself at MACWORLD Expo

There are  good reasons why you should attend the MACWORLD Expo nearest you. First, attending MACWORLD Expo means you don't have to spend lots of  and  trying to find the best solutions to your computing problems. Second, you can  and  the latest Macintosh products . . . demo hundreds of hardware, software and peripheral exhibits representing the future of  computing. Third, whether you use your  in the , at  or at  you'll learn how to use it better. Fourth, if you develop, produce or sell  products, you'll have a unique opportunity to spot upcoming . And fifth, you'll be able to  your skills, using one of the many   available, to practice what you've learned. So  the coupon below,  and  it for more information. And  this is the original Macintosh-exclusive show. Choose from these upcoming shows:

## SAN FRANCISCO '90

April 11-13, 1990  
Moscone Center  
Brooks Hall/Civic Auditorium

## BOSTON '90

August 9-11, 1990  
Bayside Expo Center  
World Trade Center

## TORONTO '90

October 23-25, 1990  
Better Living Center

Just fill in below, clip and mail to: MACWORLD Expo, Mitch Hall Associates, 260 Milton St., Dedham, MA 02026. You'll receive complete information on each show as soon as it's available. No obligation of course.



## I want to get the big picture.

I am interested in: ☐ Attending ☐ Exhibiting

Please send me details about the following MACWORLD Expos:

☐ San Francisco April 11-13, 1990 ☐ Boston August 9-11, 1990 ☐ Toronto October 23-25, 1990

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_ Street \_\_\_\_\_

City/State/Zip \_\_\_\_\_ Phone \_\_\_\_\_ MW

MACWORLD Expo is sponsored by MACWORLD, the Macintosh™ Magazine, an IDG Communications publication. MACWORLD Expo is an independent trade show produced by IDG World Expo Corp. and managed

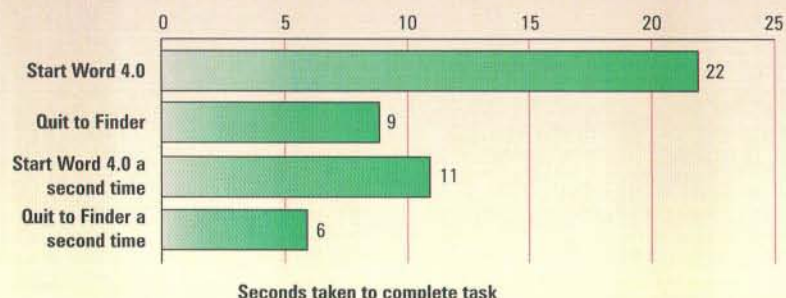
**MACWORLD  
EXPOSITION**

by Mitch Hall Associates and not affiliated with Apple Computer, Inc. MAC, MACINTOSH and MACWORLD are trademarks of Apple Computer, Inc. IDG World Expo Corp. is a company of International Data Group.



## FAST CACHE

By activating the Control Panel's RAM cache option (top), you set aside memory (up to 25 percent of the total RAM) that the Mac uses to hold recently loaded program code and data. If that code or data is needed again, the cache supplies it, eliminating a relatively slow disk access. The chart (bottom) shows how a 256K cache improves performance on a 1MB Mac SE without a hard disk. It takes less time to start Word 4.0 and quit to the Finder a second time because part of each is stored in the cache. (After activating the RAM cache or changing its size, you must restart the Mac for the change to take effect.)



the leisurely pace of a spinning disk and its mechanical read-write heads.

There are three techniques you can use to improve performance by reducing disk accesses:

- *Give an application more memory under MultiFinder* The Finder's Get Info window lets you fine-tune how large a chunk of memory MultiFinder gives a program. If you increase this amount, more of the application's program code will be able to reside in memory at once. Otherwise, the Mac will have to swap portions of the program into and out of memory as you work. Large, complex programs such as Microsoft Word, Excel, and Aldus PageMaker are especially appreciative of more memory. Use this rule of thumb: if the Mac frequently accesses the disk when you choose commands or click on icons, chances are the program you're running can benefit from extra memory.

- *Activate the RAM cache* The RAM cache stores the most recently

accessed portion of the disk in memory in case its program code or data is needed again. If it is, the Mac retrieves it from the cache instead of accessing the disk. The Control Panel lets you activate the RAM cache and specify its size. Generally, the larger the cache, the better the performance boost, until the cache equals about 25 percent of the Mac's RAM (see "Fast Cache").

- *Use a RAM disk* A RAM disk is a pseudo disk that you create in the Mac's memory using a RAM-disk utility (see "Electronic Disks"). Such a utility is often included with a memory upgrade. You can copy an application to a RAM disk and run it at lightning speed. If the RAM disk is large enough, you can stash the System Folder there too, and improve performance even more. Unless you have more than 2MB of RAM, however, chances are you won't be able to create a RAM disk large enough to hold the System Folder and a couple of applications. Incidentally, you should never store

documents on a RAM disk; if the power goes off (or even fluctuates briefly) or if the Mac crashes, you'll learn the hard way just how pseudo a RAM disk is.

### Cache Only

RAM caches and RAM disks sound similar; after all, both improve performance by replacing disk accesses with memory accesses. But beyond that the similarities end. A RAM cache is dynamic; its contents change as you use the Mac. A RAM disk contains only what you put in it. What's more, the effectiveness of each depends on how you use the Mac. If you generally run only one or two programs and you want maximum performance from them, try a RAM disk. If you routinely switch between two or more applications using MultiFinder or if you regularly repeat certain tasks, a RAM cache may be the better choice. But if your computing habits are haphazard rather than repetitive—if you never know which command or program you'll be using next—a RAM cache won't help much, since much of the program code it holds may not be needed again.

Some Macs can get the performance-boosting benefits of a RAM cache without donating some of the RAM that holds the programs. The IIfx has a slot designed to accept an optional *cache memory* board, which holds a small amount of static RAM that can supply data several times faster than the machine's conventional dynamic RAM chips. Apple's cache memory board will provide 32K of cache memory; other manufacturers have boards in the works that will provide more. Apple claims its cache board will make the IIfx about 20 percent faster.

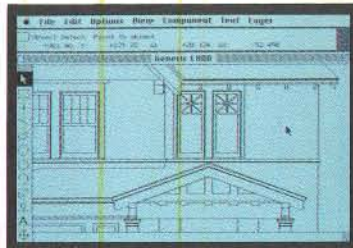
Those of us who don't drive a IIfx can still benefit from cache memory. Orchid Technology's MacSprint II is a 32K cache memory board for the Mac II that boosts performance by about 30 percent—not bad for a \$299 add-on. You'll also find cache memory on some accelerator boards—those brain transplants that replace the Mac's central processor chip with a faster one (see "Getting Started with Expansion Slots," *Macworld*, April 1989). For example, the Radius Accelerator 16 and (continues)



# REAL CADD FOR YOUR MAC... JUST \$149.95!

**Affordable CADD. And it's  
only the beginning.**

The CADD stands for Computer Aided Design and Drafting. With a suggested retail price of just \$149.95, Generic CADD Level 1 makes the power of real CADD affordable. And it's just part of a family of Generic CADD products that will make you more productive than ever before.



**Standard Mac interface for  
ease of use.**

Now you can produce accurate drawings with real world scale on the Mac Plus, Mac SE, or Mac II. You can edit multiple drawings in separate windows and cut and paste between them. CADD Level 1 is also multifinder compatible.

**Symbol Libraries boost  
productivity.**

From office furniture to specialized electronics symbols, our Symbol Libraries save you the time of redrawing repetitive elements every time you need them.

**Add the power of real CADD  
to your Mac.**

Move your Macintosh drawings into the real world. **Call us at 1-800-228-3601** for your free CADDalog or the name of your Generic dealer. And find out why we say that the only thing generic about us is the price.

1989 Generic Software, Inc. Generic CADD Level 1 is not copy protected and comes with a 60-day money back guarantee. Registered users get free technical support from Generic.

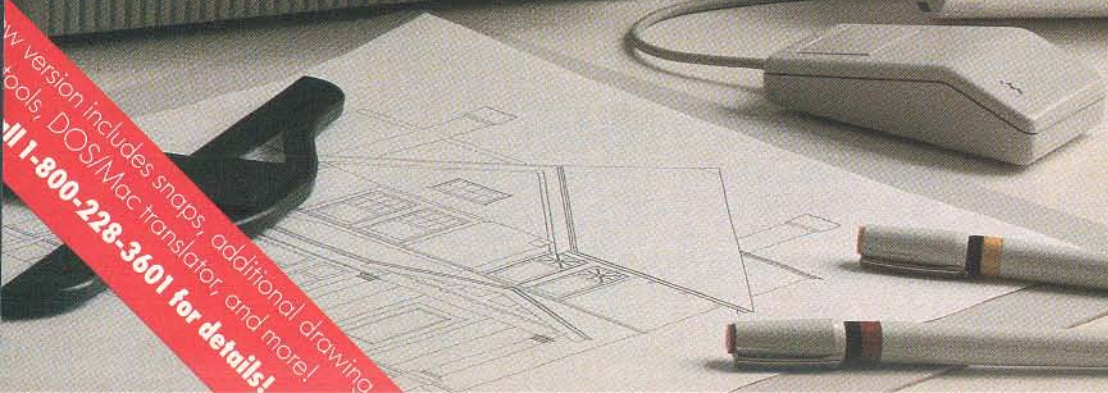
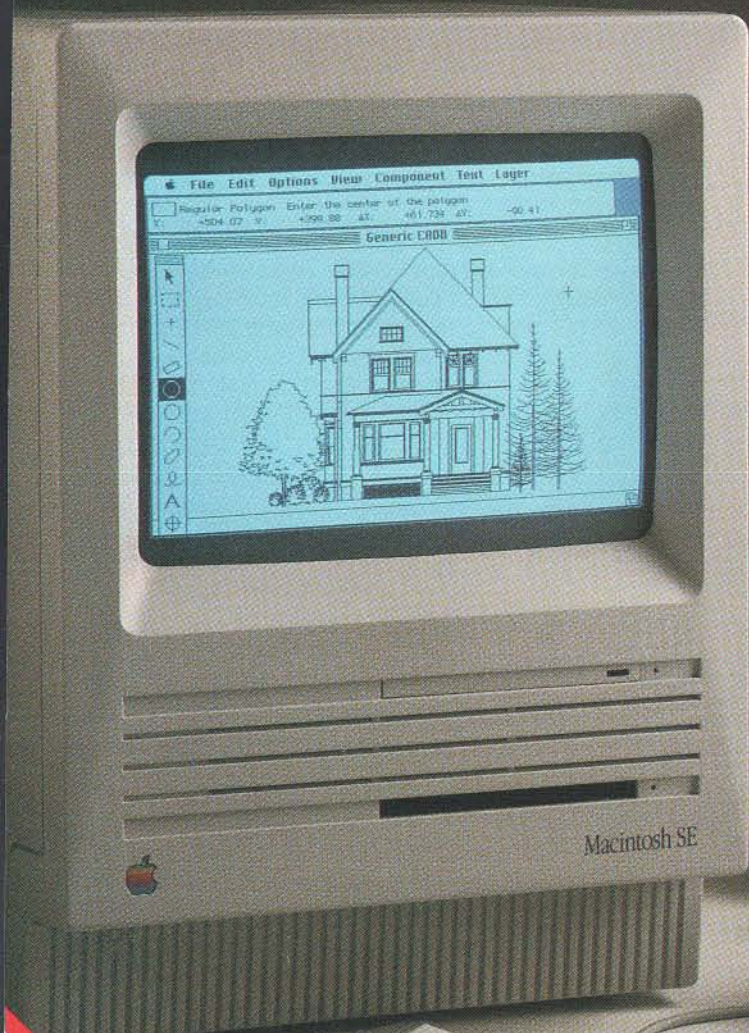
Level 1 and Generic CADD are trademarks of Generic Software, Inc. Macintosh is a trademark of Apple Computer, Inc.

11911 North Creek Parkway South, Bothell, WA 98011

**Circle 157 on reader service card**

**Generic**  
S O F T W A R E

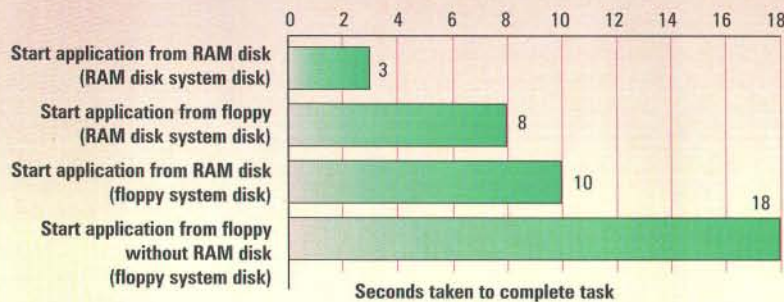
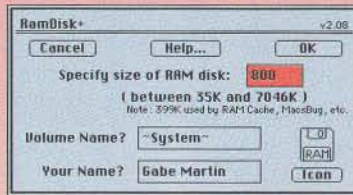
... version includes snaps, additional drawing  
tools, DOS/Mac translator, and more!  
**Call 1-800-228-3601 for details!**





## ELECTRONIC DISKS

A RAM-disk utility such as Roger Bates's RamDisk+ (top) lets you set aside an area of memory as an electronic disk drive that works at lightning speed. (Another popular shareware RAM-disk utility is George Nelson's RAMStart.) RamDisk+ lists the minimum and maximum practical RAM disk size for the Mac it's running on (in this case, an 8MB Mac II) and also tells you how much memory is being used by the RAM cache and any programmer's debugging aids such as MacsBug. The chart (bottom) compares a RAM disk's effect on performance when it holds just an application (in this case, WriteNow 2.0), just the System Folder, and both the System Folder and an application against performance without a RAM disk.



Accelerator 25 boards for the SE both contain 32K of static cache memory.

### Virtual Virtues

One of the most exciting recent developments in Macintosh memory has almost nothing to do with RAM. I'm referring to *virtual memory*, a software sleight of hand that can make a Mac act as though it had far more memory than it actually does.

Virtual memory is essentially a RAM disk in reverse: instead of treating part of RAM as a disk, it treats part of a hard disk as RAM. Set aside 8MB of hard-disk space for virtual memory, and you'll have the electronic equivalent of an 8MB Mac. Virtual-memory system software and the Mac's *memory management* hardware work behind the scenes to swap program code and data between the Mac's RAM and the hard disk. Because hard disk space costs less per megabyte than RAM, virtual memory is an economical way to banish those out-of-memory messages.

System 7.0, a major upgrade to the Mac's system software scheduled to

debut this year, will add virtual-memory features to the SE/30, IIfx, IIfx, and IIfx. The 68030 processor in these Macs contains built-in memory-management hardware. To use virtual memory on a Macintosh II, you need to add an additional chip, the Motorola 68851 *Paged Memory Management Unit*, or PMMU.

If you can't wait for System 7.0, consider Connectix Corporation's Virtual software, an INIT that adds virtual-memory features to any Mac with memory-management hardware. (The Mac II version of Virtual includes the 68851 PMMU chip, which anyone with steady, static-free hands can install. Specialized versions of Virtual are available for Mac Pluses and SEs that contain 68020 or 68030 accelerator boards.) The latest version, Virtual 2.0, performs some fancy technical tricks that can give you the equivalent of 14MB of memory—even though current versions of the Macintosh's system software support only 8MB. And Virtual runs on 1MB Macs; System 7.0 will require 2MB.

But virtual memory isn't complete nourishment for a memory-starved Mac. For one thing, it's not as fast as real memory—remember, hard disks are mechanical beasts. A Mac with 8MB of real RAM will be faster than the same machine with 2MB of RAM and 6MB of virtual memory. (The exact difference in performance depends on the programs you run and on the speed of your hard disk.)

What's more, virtual memory works best when your Macintosh contains enough RAM to accommodate your largest programs. For example, if one of your programs needs 4MB, your Mac should have 4MB of RAM, even if all your other programs use less than 1MB. If you try to use virtual memory to shoehorn a huge program into a 1MB Macintosh, you'll be forced to endure frequent slowdowns due to *thrashing*, the nearly constant swapping of data between the Mac's memory and its hard disk.

And finally, virtual memory uses hard disk space that could otherwise hold documents or application files. If you have a 20MB hard disk, you may not be willing to donate a third of its capacity to virtual memory.

But then again, you may. If you use only one or two programs—but they're memory-hungry ones—trading disk space for fewer memory problems may be worthwhile. And the low cost of virtual memory can make its slower performance tolerable.

That's the thing about memory—deciding how much you need and how to use it effectively is a game of trade-offs. You must set aside enough memory to accommodate system software and INITs, yet retain enough to run your applications—while your budget stares over your shoulder. The game isn't easy, especially if you're just getting started with the Mac.

But look at it this way: at least you don't have to use wire cutters to change programs. ■

*Jim Heid is a Macworld contributing editor who each month focuses on a different aspect of Mac fundamentals. His latest book, coauthored with Peter Norton, is Inside the Apple Macintosh, an advanced user's guide published by Brady Books.*



98

Parts Schedule  
Materials List  
Cost Estimates  
Door Schedule



Send list to the  
file "Materials?"

Yes

No

## Parts Schedule

## Cost Estimates

## Materials List

Qty	Description	
	Surface Materials	23.45
	5/8" Wall Board 5' X 10'	14.50
36	1/8" Tile - Mosaic	56.95
142	Brick - Chicago	12.00
2689	Siding Alum (Sky Bl)	78.95
63	Paneling (Oak)	12.00
12		05.00
		67.45
	Wall Fixtures- Elec:	34.00
24	Wall Outlets	78.00
8	Single-Pole Switches	62.00
	Modular Phone Jacks	\$5.00
	CTV Plug-In	34.00
	Thermostats	67.89
		45.00
	Lighting Fixtures:	12.00
	Faucets	
	Power Enclosure	
	Dryer	

**BLUEPRINT**  
For 2D-Only CAD Users - the Same Award-winning  
Quality of MiniCad+ at a Much Lower Price.

	A	B	C
1	Desk Area	Plotter	102 Sq In
2		Mid Sect	
3		Computer	175 Sq In
4			
5	Room	Office	246 Sq Ft
6		Foyer	200 Sq Ft
		WC	150 Sq Ft

# MiniCad+™

Computer-Aided Design and Analysis comes of Age

MiniCad+ rises on the foundations of a groundbreaking Macintosh CAD program, MiniCad 2D/3D. Universal in aim, MiniCad Plus is a total design and analysis solution, the answer to time-consuming transfers between applications. This professional CAD system offers the following easy-to-use components:

- High precision 2D drafting environment which includes complex duplication with arrays, hierarchical symbol editing with both external and internal libraries, fillets, bezier & cubic splines, auto-join, auto-dimensioning, continuously variable zoom up to 1000x, double-line tools with auto-clean up, 256 user-definable attributes, 8 line types, unlimited layers, full use of Mac II, and more...
- Active spreadsheet inside drafting area which can be hot linked with objects to perform area calculations, parts schedules, cost estimation and more. As easy-to-use as the spreadsheet you're using now.
- All new integrated 3D that is so powerful and user-friendly we may change your mind about micro 3D.
- MiniPascal, a programmable macro language, will allow advanced users and 3rd party vendors to create reports, macros, and powerful extensions to MiniCad Plus's capabilities.

Graphsoft • 8370 Court Ave. Suite 101 • Ellicott City, MD • 21043

MiniCad+ \$695 • Demo Available for only \$19.00

MiniCad Plotter Drivers: Prof. \$300 Stand. \$150

U.S.: 1 (301) 461-9488 • Canada: 1 (604) 384-2131 • Australia: 61-7-369-1204

Visa & MasterCard Welcome

**Graphsoft**

Circle 177 on reader service card



# BACKUP

## Breakthrough...

### 155 MB SCSI Tape Backup System for the Price of 60 MB!

The MicroPak 155 MB Tape Backup System is remarkable. It can stream at 5 MB per minute. It is small enough to be shared. It retails for less than \$1,000.

Think about it. How much is your data worth? Can you afford to recreate files? An MBT-155 Tape Backup System is an effective way to prevent data loss.

Our tape utility software is easy to use and allows for file-by-file backup and recovery, as well as, mirror image and incremental backup and restore.

The power requirements of the MPT-155 are low. It is designed so that it can safely use the battery of the Macintosh Portable.

MicroNet offers a wide range of Macintosh streaming tape backup systems and hard disk drives that are designed to fit the needs of the entry level user to that of a network manager.

Data sheets and the name of nearest dealer on request.

**"QUALITY YOU CAN COUNT ON"**

Macintosh is a registered trademark of Apple Computer, Inc.

We offer the finest in Internal and External Hard Disk Drive Systems from 20 MB to 2,022 MB, Tape Backup to 525 MB, 45 MB Removable Cartridge, DAT and Rewritable Optical Systems.



## MicroNet Technology, Inc.

20 MASON • IRVINE, CA 92718 • TELEPHONE: (714) 837-6033  
FAX: (714) 837-1164 • APPLELINK: D1656 • COMPUSEVER: 76004,1611 • CONNECT: MICRONET

Circle 275 on reader service card



# Insights on PageMaker 4.0

TIPS ON USING THE LATEST VERSION OF DESKTOP PUBLISHING'S FAVORED CHILD

**T**

BY OLAV MARTIN KVERN  
AND STEVE ROTH

he newly released PageMaker 4.0 goes a long way toward answering the criticisms leveled against the program by professional users, adding strong typographics and dozens of other features, while retaining the fluid interface that has

always been the program's hallmark. Here's a load of tips for using the new features, and some new workarounds to compensate for the features that still aren't there.

## Story Editor

Text editing has always been a problem in PageMaker—originally because of bugs, but lately more because PageMaker is a page-makeup program, not a word processor. PageMaker 4.0 addresses the problem with the Story Editor, which provides a new text view that's set up for more heavy-duty editing (see "Story Editor"). You can get to it a couple of ways:

- Triple-click on a text block
- Select a text block with the pointer tool or click an insertion point with the text tool, and press ⌘-E

Some things (search-and-replace, checking spelling) you can do only in story view, some (changing column width and position) only in layout view, and some (general text editing and formatting) in both.

## Turning Pages

The quickest way to get to the next page isn't clicking on the icon for the next page. Instead, press ⌘-Tab. To

Adapted from *Real World PageMaker: Industrial-Strength Techniques for the Macintosh*, by Steve Roth and Olav Martin Kvern (Bantam/ITC, 1990).

go to the previous page, press ⌘-Shift-Tab. If you press these keys several times in a row, you jump several pages without stopping to display each one. So even if you're moving forward ten pages, you may find it easier to hit ⌘-Tab ten times (or five times with facing-page view).

To scroll through all the pages, hold down Shift and choose Go to Page, from the Page menu. PageMaker jumps to the first page of the document and starts displaying pages (or spreads) one after another. When it gets to the end it goes back to the first page and starts over. Click to stop at any time. You might first want to

change the page view to something like Fit in Window for all your pages (hold down Option and choose a page view). These tricks also work in PageMaker 3.xx, though hardly anyone seems to know about them.

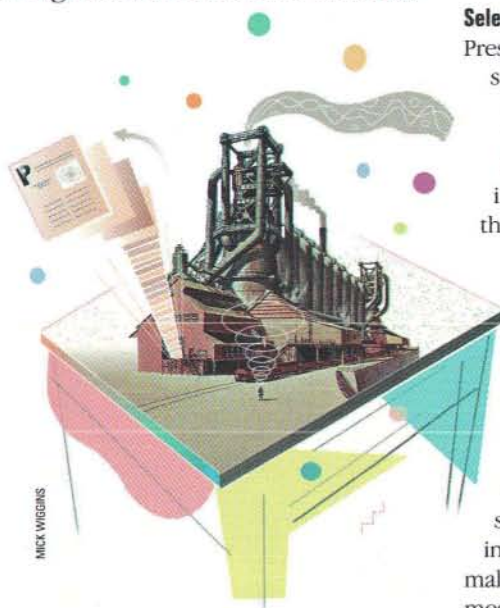
## Selecting Tools with the Keyboard

Pressing ⌘-space bar in PageMaker 4.0 selects the pointer tool, no matter what tool you're currently using. If your keyboard has function keys, you can select tools by pressing certain Shift combinations; these also work in 3.xx (see "Toolbox Shortcuts"). If you have QuickKeys or another keyboard utility, you can even eschew the Shift key and just use the function keys.

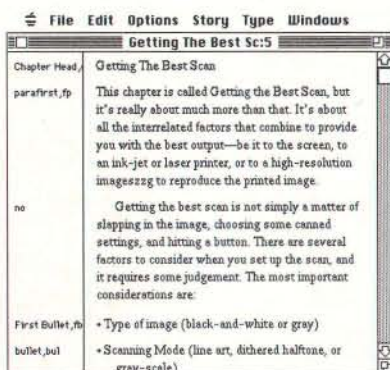
## Percentage Scaling

Although PageMaker still won't size graphics to a percentage you specify, there is a way to do it using a calculator. Choose Inches decimal (or Millimeters) for the horizontal measurement in Preferences (under Edit). Set the zero point to the upper-left corner of the graphic. Measure the width of the graphic. Multiply the width of the graphic by the percentage reduction (or enlargement) you want (for example, if the graphic is 6 inches wide and you've specified an 80 percent reduction, you multiply 6 times .8). Drag out a ruler guide from the vertical ruler until the guide reaches the horizontal ruler at the measurement you found in the preceding step (in this example, 4.8 inches).

Make sure that Snap to Guides is on (⌘-U toggles it on and off); then (continues)







### Story Editor

Triple-click on a text block, and PageMaker brings up the whole story in its new story view. When you finish editing and close the window, the changes are reflected in layout view.

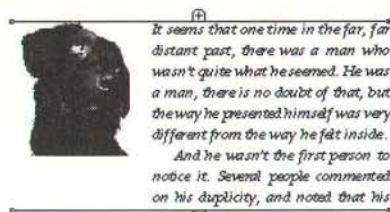
hold down Shift, select the handle on the lower-right corner of the graphic, and resize the graphic until it snaps to the vertical ruler. This technique is fairly accurate, especially if you zoom into 400% size under the Page menu (⌘-4) before setting the ruler guide. In that view, the ruler increments are every .05 millimeters, or every .01 inch.

### New Lines

A great new feature in PageMaker 4.0 is the new-line character; while holding down the Shift key press Enter (usually found on the numeric keypad). You use the new-line character when you want to break a line but do

not want to start a new paragraph. For example, when working with complex tables, you might want to add a second line to a table item without adding a new paragraph with its attendant attributes—first-line indent, space before, space after, or paragraph rule. The new-line character is also handy if you want to break a line of justified text and keep it justified.

The tabs on the new line are the same as those on the previous line because they're all part of the same



### Hang Dog

It may not look like it, but that doggie to the left is actually the first character in the paragraph. It's set up like a normal hanging indent, with a tab between the dog and the first word of the paragraph. You can position the graphic relative to the first line of text by dragging it up and down with the pointer tool.

paragraph. To set different tab stops on the two lines, you need to make each line a separate paragraph.

### Inline Graphics

You can embed graphics in text in PageMaker 4.0, just as you can in a word processor. You can even place graphics inline instead of pasting them in. When you click an insertion point, you get a new option in the Place Document dialog box: As inline graphic.

Inline graphics follow the text flow across columns and over page breaks. No more painful repositioning of graphics relative to text. You can size inline graphics, but you can't set a text wrap for them.

### Autoleading

Ordinarily, when you place an inline graphic, it conforms to the leading set for the paragraph. If you want to make the paragraph the height of the graphic, the obvious solution is to choose Autoleading for the paragraph. The only problem is that you'll get some space above and below the graphic. The solution: open the Para-

graph Specifications dialog box (⌘-M) and click the Spacing button.

In the Spacing Attributes dialog box, type 100 in the Autoleading text-edit field. Close the dialog boxes by pressing Return twice. The paragraph is now exactly the height of the graphic. You can create a style for graphics-only paragraphs with auto leading set to 100 percent.

### Hanging Inline Graphics

You can even make inline graphics hang outward in a companion column to the left of the main text block (see "Hang Dog"). This trick is similar to creating a normal hanging indent for bulleted lists and the like, but you must use a large indent to leave room for the graphic. For instance:

Left indent: 1 inch  
First-line indent: -1 inch  
First tab stop: 1 inch

Now place or paste the graphic as an inline graphic, that is the first character in the paragraph. Press the Tab key to move the text over. Select the whole paragraph (including the graphic) and set the leading you want—don't use autoleading or this won't work.

Now comes the magic. Grab the inline graphic with the pointer tool and drag it up and down until you've got it where you want it. You're actually moving the graphic's baseline, positioning it in relation to the baseline of the first line of text.

### Tabs Come Up to Snuff

Users of PageMaker 1.2 and 2.0 will remember how badly those versions handled tabs. Version 3.0 went a long way toward improving that, and version 4.0 has almost got it right. The new PageMaker includes a stand-alone table editor program, and much-improved tab handling.

When you choose Indents/tabs from the Type menu (⌘-I), the zero point of the ruler in the resulting dialog box aligns with the left edge of the currently selected text block, if the left edge is visible in the window (see "Adjustable Tabs"). This makes setting tabs a lot easier.

You can now select a tab (in the *continues*)

## TOOLBOX SHORTCUTS

These shortcuts are especially useful when you're using a small-screen Mac and want to get the toolbox out of your way.

### Shift +

- F1 Pointer tool
- F2 Line tool
- F3 Constrained-line tool
- F4 Text tool
- F5 Rectangle tool
- F6 Rounded-rectangle tool
- F7 Ellipse tool
- F8 Cropping tool



SYMANTEC™

# SUM II™

Symantec Utilities for Macintosh

For Macintosh Plus and higher.

MAC  
TOOLS  
d e l u x e

Central Point Software INC.  
A MEMBER OF THE VIDEO TECHNOLOGY GROUP (503) 690-8090

# Some.

# All.

Why settle for an incomplete set of utilities when you can have them all?

Introducing MacTools® Deluxe—the most comprehensive, powerful collection ever assembled for the Macintosh.

It lets you find misplaced files, recover crashed disks, undelete trashed files, backup your data, optimize volumes, secure files and folders, quickly copy floppies, organize folders, and even partition your hard disk.

Not only do you get the broadest range of utilities available, but each function sets new standards for performance. For instance, let's say you want to undelete a trashed file. Using a selective search, MacTools locates likely candidates and lets you view their contents prior to recovery—so you don't waste time or retrieve unwanted files. No other utility even comes close.

So why settle for some, when you can have it all?

MacTools Deluxe...from the leading developer of Macintosh utilities since 1984.

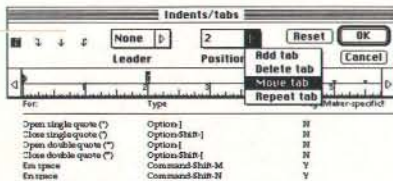
MacTools Deluxe SUM II 2.0 FastBack II 2.0	
x x	<b>Data Recovery</b>
x	File Undelete with View
x	Minor File Repair
x x	Disk Protection
x x	Hard Disk Crash Recovery
x x x	<b>Hard Disk Backup</b>
x x	Multiple File/Folder Selection
x x	Data Compression
x x	Multiple Setup Files
x	<b>File Locator DA</b>
x x	<b>Hard Disk Partitioning</b>
x	Automount w/Password Prompt
x x	<b>Hard Disk Optimization</b>
x	Complete Disk Erase
x	Color Disk Map
x x	<b>Secure/Encrypt File</b>
x	Desk Accessory
x x	<b>Fast Floppy Copying</b>
x	<b>File Management</b>

Central Point Software INC.  
(503) 690-8090

Minimum requirement: Macintosh Plus. MacTools is a registered trademark of Central Point Software. All other product names are trademarks of their manufacturers.

Circle 357 on reader service card





### Adjustable Tabs

In PageMaker 4.0, the tab ruler lines itself up with the left edge of a selected text block, and you can modify existing tabs, rather than having to delete the old and add a new one.

Indents/tabs dialog box) that has already been set and change it to any other type of tab by clicking on the tab icon you want, or you can type in the tab's new position. You can also change a tab's dot leader by selecting the tab and making changes in the leader-text edit box.

One last tabular note for financial page-makers: version 4.0 now properly aligns columns of decimal-tabbed figures even when some figures are in parentheses and there are no decimal points. Footnotes must be next.

### Define Colors Fast

Bypass the Define Colors dialog box

by ⌘-clicking on Registration in the Color palette. You get the New Color dialog box. If you've got an object selected when you ⌘-click on Registration, the New Color dialog box fills in with the color attributes of the selected object. Define a new color, press Return, and the color name appears in the Color palette.

Because PageMaker doesn't apply the new color to the selected object until you click on the color name in the Color palette, you can use this technique repetitively to create a series of tints of some base color or to create a series of entirely new colors.

### Replace One Color with Another

Have you ever defined more colors than you want? Here's the fast way to replace one color with another (to end up with fewer spot-color overlays, for example).

Choose Define Colors from the Options menu and double-click on the name of the color you want to change. Make its name the same as the color you plan to replace it with, and click OK.

When PageMaker displays the prompt "Replace all of <firstcolor> with <secondcolor>?" click on Yes to replace the color. At this point, a peculiar thing (which may or may not be a bug) happens—the OK button goes gray and you can't leave the dialog box and keep your changes. Just select any color, and you can then click OK or press Return. Every item that was the first color becomes the second color. (You can use a similar technique for replacing styles.)

### Fun with Type Options

There's a new dialog box in PageMaker 4.0 that lets you set superscript and subscript sizes and positions, and the size of small caps. At first glance, it may not seem to offer much. However, if you dig a little deeper, you discover that it lets you create some nifty type effects. Here, for instance, is yet another way to create drop caps in PageMaker (see "Dropping Out"). You need to specify fixed leading—not autoleading—for this to work.

Select the first character in the (continues)

**PostScript®**  
on almost any printer  
No Hardware Required

**\$145**

TScript PostScript software interpreter outputs from any Macintosh or IBMPostScript application. TScript supports HP LaserJet series, DeskJet, DeskWriter, GCC PLP, LaserWriter SC, ImageWriter, Canon LBP. Previews PostScript files to Mac screen. Runs on MacPlus or higher. Also available, color PostScript on Mitsubishi printer and Mirus FilmPrinter.

**30 DAY MONEY BACK GUARANTEE**

Dealer  
Inquiries  
Welcome

TScript® is a registered trademark of TeleTypesetting Co.,  
PostScript is a registered trademark of Adobe Systems, Inc. All  
other products and names are registered trademarks of their  
respective manufacturers. TScript was formerly called MacRIP.

TeleTypesetting  
**617-734-9700**

See us at SF  
MacWorld #5229

Circle 476 on reader service card.

**QUESTION:** Why would your computer warranty only be good for 90 days?

**ANSWER:** Simple. Because computers break down!

Sooner or later, your computer will break down. Or, at any time you could be the victim of a power surge, fire, theft, natural disaster, accidental damage, and more. The odds against you are high.

Unless you have the ready cash to repair or replace your computer system, you need **SAFWARE FIX-IT**. Be insured for mechanical breakdown, (wear and tear) as well as external losses. All in a single policy for as little as \$100. per year. Call free for full information!

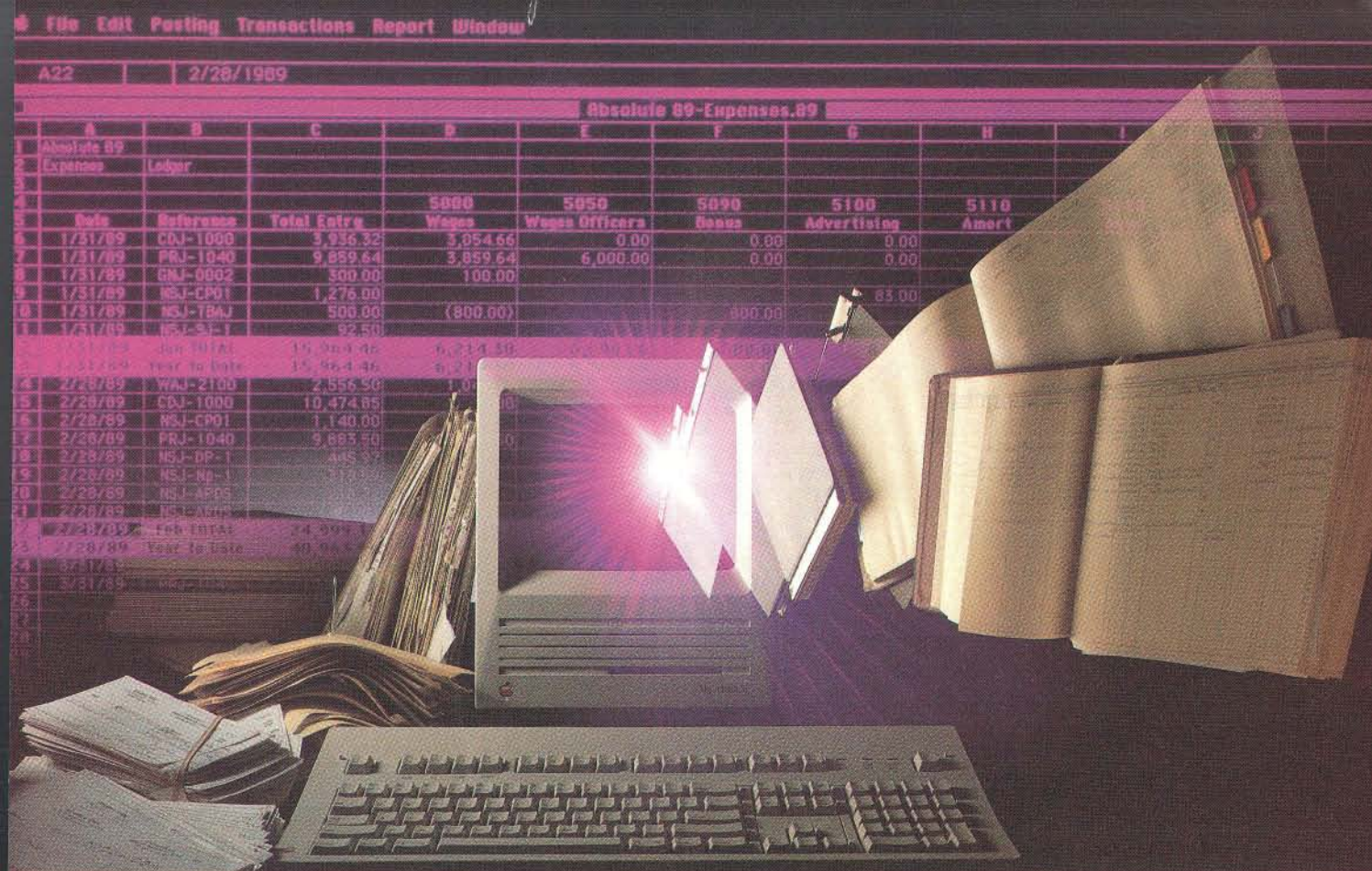
**1-800-822-2345**  
Local 614-262-0708 Fax 614-262-1714

**SAFWARE**

**SAFWARE, The Insurance Agency Inc.**  
2929 N. High Street • P.O. Box 02211  
Columbus, OH 43202  
Not Available in All States

Circle 293 on reader service card.





# Now that you bought Excel...

Now, for the first time, a complete accounting Microsoft Excel spreadsheet General Ledger AR/AP/ Inventory program that looks like manual books, works like manual books yet offers all the advantages of computerization. *Computerized Classic Accounting™* allows you to do accounting the way you've learned it, translated to the speed and power of Microsoft Excel, the ultimate spreadsheet. No long start-up periods, no extensive employee training, no difficulty in audit... just the most logical, fastest, most flexible way to keep books you've ever seen.

...*Computerized  
Classic Accounting™*



(Jan. 1990 MacUser Magazine)

"Mimicking the paper journals and ledgers that bookkeepers and accountants are accustomed to...*Computerized Classic Accounting™* provides a remarkable level of accounting, record keeping and analysis, in a simple flexible product that can be easily customized."

-Ken Landis, Jan. 1990 MacUser Magazine

"*Classic Accounting™* is the only computer accounting product that returns us to real accounting."

-Dr. Samuelson, Chairman of Accounting and Law, Pepperdine University

**TO ORDER NOW OR FOR  
MORE INFORMATION CALL**  
in CA 1-800-458-3399, Nat'l., 1-800-633-7666,  
Int'l., 1-619-966-8000, in Canada 1-800-245-0223

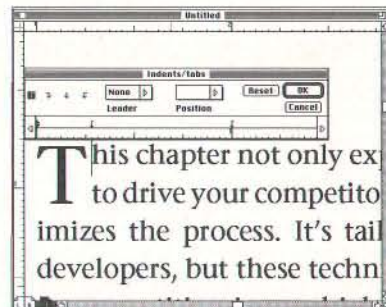
Circle 474 on reader service card



paragraph, and call up the Type Specifications dialog box (⌘-T). Choose the size you want for the drop cap (don't change the leading) and choose Subscript from the Position pop-up menu. Then click on Options and type 100 for Super/subscript size and 50 for Subscript position in the Type Option dialog box. You have to adjust the position for the typeface and size you're using, but 50 is a good place to start. Higher numbers move the letter down. Hit Return twice to close the two dialog boxes.

Next, place the insertion point immediately to the right of the dropped capital and press Tab. Bring up the Indents/tabs dialog box (⌘-I) and align the first tab with the point at which you want the body copy to start. Go to the end of the line and press Return; put a tab at the beginning of the second line. Continue for as many lines as necessary.

If you're working with justified type, you'll need to use the new-line character at the end of each line so they stay fully justified or use normal



### Dropping Out

You can create drop caps by treating the cap as an oversize subscript, and adjusting the subscript position. Then you set tabs (in this example, before *his* and *to*) for the position of the body text.

Returns and justify the lines using the new Force justify alignment option. For another example of fancy effects from Type options, see "Type within Type."

### Searching and Replacing

PageMaker 4.0's Story Editor has great search-and-replace features, including the ability to replace text attributes. You can search for every instance of character formatting and replace it with different formatting. This is especially handy if, for example, all the product names in your company brochure should be in 9-point Stone Sans Bold Italic. You can use some attribute that's easy to apply from the keyboard (like outline or underline), then replace that formatting with 9-point Stone Sans Bold Italic.

Open the story you want to change with the Story Editor, then choose Change from the Edit menu. Do not enter any text in the Find What and Change To text-edit boxes. Click on the Attributes button, and enter the current formatting attributes of the text, then enter the new formatting attributes.

(continues)

# Copacabana

### Type within Type

Here's another interesting type effect using the Type Options controls, with the addition of kerning (lots of kerning). You've probably seen this type effect often—particularly in corporate logos and advertising.

Because in every major market of the world, the Computer Connectivity Series of the ICCs gives the PC networking professionals what they need



to know about LANs, networking, modems, software, personal computers and associated products.

Through product demonstrations and technical seminars, the attendees, in one day, learn the latest technology and discuss their application requirements.

Manufacturers have the opportunity to meet one-on-one with industry leaders, Corporate MIS/DP managers and third party distribution personnel, to demonstrate their products and reinforce their commitment to customer support on a regional basis.

### JOIN THE 1989/90 COMPUTER CONNECTIVITY SERIES

#### U.S. LOCATIONS

Los Angeles, CA	October 26, 1989
Ft. Lauderdale, FL	November 30, 1989
New York City, NY	April 12, 1990
Dallas, TX	April 24, 1990
Boston, MA	May 8, 1990
Palo Alto, CA	May 24, 1990
Seattle, WA	May 31, 1990

#### EUROPE LOCATIONS

Madrid, Spain	September 19, 1989
Paris, France	October 2, 1989
Brussels, Belgium	October 4, 1989
London, England	February 8, 1990

### ASK ABOUT THE ASIA/PACIFIC SERIES!

For more information contact: Invitational Computer Conferences, a division of Dataquest, 3151 Airway Ave., C-2, Costa Mesa, CA 92626, Telephone: (714) 957-0171, Telex: 5101002189 ICCDQ, FAX: (714) 957-0903.



*"Everyone  
concerned  
about  
Computer  
Connectivity  
should go  
to the  
Invitational  
Computer  
Conferences."*

EDWARD COOPER  
SENIOR DIRECTOR OF MARKETING  
NETWORK PRODUCTS GROUP  
NOVELL, INC.



# When you need a change of face.

You bought ATM™ to clean up your text; now add TypeAlign to throw your text a curve—or give it a new slant. And do it so intuitively, you'll wonder why everyone doesn't do it our way.

TypeAlign is incredibly easy to use—no special drawing programs or skills needed. Just choose a tool to draw an arc, straight line or freehand curve. Type on the line you just drew—your words appear instantly on screen. Adjust the spacing between letters and words until it's just the way you like it. Then rotate, manipulate, distort to your heart's content.

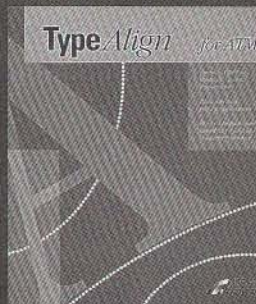
Since TypeAlign is a desk accessory, you install it once in your Macintosh® computer, then use it in just about any application. And you can print your creation on any ATM-supported printer or other device, including Apple® ImageWriters®, LaserWriters® and Hewlett-Packard® DeskWriters® and PaintJets®. Of course, TypeAlign works with any Adobe® PostScript® font, too.

Let's face it. If you have ATM, you need new TypeAlign, too. Especially with a suggested retail price of only \$99.95.

To find out where you can buy it, call Emerald City Software at 1-800-223-0417, in CA 415-324-8080.

## TypeAlign™—a new desk accessory exclusively for Adobe Type Manager™ owners.

TypeAlign is a trademark and Emerald City Software is a registered trademark of Emerald City Software. Adobe and PostScript are registered trademarks and Adobe Type Manager and ATM are trademarks of Adobe Systems Incorporated. Apple, ImageWriter, Macintosh and LaserWriter are registered trademarks of Apple Computer, Inc. HP, DeskWriter and PaintJet are registered trademarks of Hewlett-Packard, Inc. © 1989 Emerald City Software. All rights reserved.



**EMERALD  
CITY  
SOFTWARE**

Dealers circle 512 on reader service card  
End users circle 513 on reader service card



Circle 86 on reader service card.

Press Return to go back to the Change dialog box, then click on the Change all button. All text that was formatted with the first set of attributes will be reformatted with the second set of attributes. Depending on the formatting you specify, you may not be able to see your changes until you return to the layout view.

The Change Attributes dialog box still has some limitations: you can't search for (or change) based on attributes for leading, color, case, position, tracking, or Set width (type condensation or expansion). Still, it's a big improvement over the previous versions.

#### Rotated Text Blocks

PageMaker 4.0 lets you rotate anything you want as long as it's text, as long as it isn't threaded to other text, and as long as you're satisfied with 90-degree increments. If you've been trying to rotate a text block and the Text Rotation selection on the Element menu remains grayed out, you need to make sure that

- all the text in the story has been placed,
- the text block is not threaded to any other text block,
- no more than one text block is selected,
- the text block does not contain any inline graphics, and
- the story is not open in the Story Editor.

#### Quick Index

The indexing in PageMaker 4.0 is about as well conceived as anything we've seen (or envisioned). There's a lot to it, but if you want to add just one word, double-click with the text tool to select the word, press ⌘-Shift-; and press Return.

#### Double Your Pages, Double Your Funds

You can save 50 percent on service-bureau charges by printing two PageMaker pages side-by-side on a single piece of paper or film. You have to have room for two pages across the roll.

The trick is to use Manual Tiling. Set the page size you want in Page Setup. Choose double-sided, facing pages. Set the ruler's zero point to the upper-left corner of the left-hand

page. This sets the upper-left corner of your tile.

In Print Options, select Letter, Wide (if you need a different size, you'll need to edit the APD file for your imagesetter). In the Print dialog box, select the left-hand page to print (page 2, or 4, or whatever) and press Return. The right-hand page just comes tagging along with it, within the size limits of the imagesetter.

You have to choose each left-hand page to print individually, and service bureaus won't want to babysit your job that much, so you might want to save each spread in PostScript format (Choose Options in the Print dialog box) then send all the PostScript files to the service bureau. PageMaker will not print automatic crop marks for the right-hand pages using this method, so you will probably want to place your own crop marks on the master pages.

#### Printing Outside the Page Area

You can print whatever you want outside the page area (within the limits of the actual physical paper size). If you want registration marks someplace other than where PageMaker puts them, or if you want to print a job name, date, or time, here's how.

Create a white box in a draw program, put the registration mark inside the box, then copy and paste both the box and the registration mark onto the page (with FreeHand or Illustrator, you'll have to Option-copy). As long as some part of the graphic (in this case, the white box) is touching the page, PageMaker will print the whole thing—within the limits of the output device's imaging area.

#### Sharing the Wealth

If you've found a tip or shortcut not mentioned here, spread the word to other *Macworld* readers by sending it to *Quick Tips*, *Macworld*, 501 Second St., San Francisco, CA 94107. ■

*Olav Martin Kvern and Steve Roth (a Macworld contributing editor) spent the last nine months writing the definitive Macintosh PageMaker book. Between them, they've produced a stack of PageMaker pages several stories tall.*



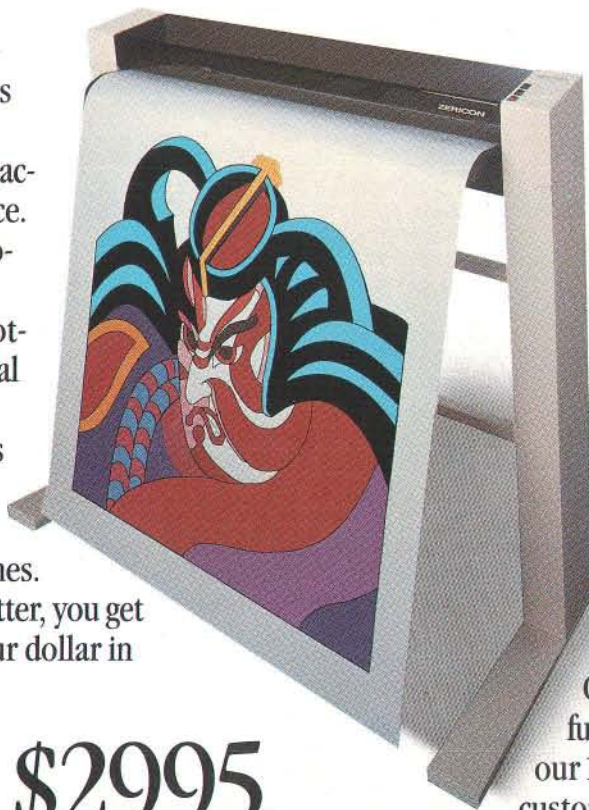
# Large format plotters for designers who want performance, but can't afford expensive.

## Best Price Performance

These days more companies are concerned about CAD budgets but don't want to sacrifice quality or performance. That's why more design professionals are turning to Zericon for large format plotting solutions. At 21 diagonal inches per second and advanced speed up features like look ahead vector analysis, you'll fly through curves as well as straight lines. When you buy a Zericon plotter, you get the best throughput for your dollar in the industry today.

## \$1695. - \$2995. Factory Direct Pricing

Starting at \$1695. for our ValueLine D size, to \$2995. for our Designer Series A-E model, we make a large format plotter that's just right for your application.



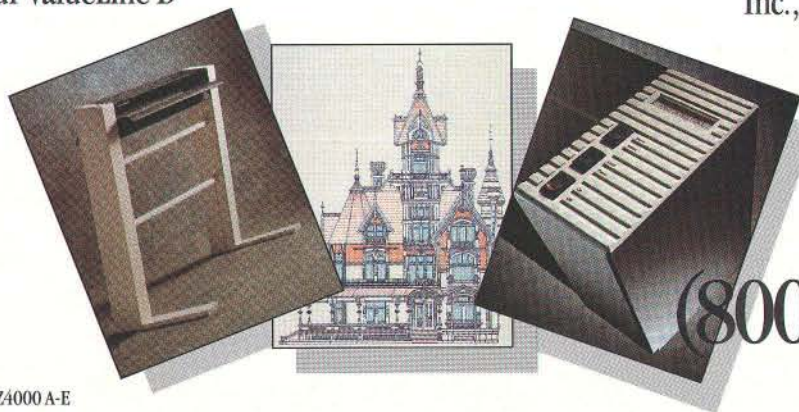
FEATURES	3610	3620	Z3000	Z4000
MEDIA	C/D	C/D	A-D	A-E
PRICE	1695.	1895.	2695.	2995.
8 PEN OPTION			395.	395.
DIA/SPEED	7ips	15ips	21ips	21ips
REPEATABILITY	.004	.004	.004	.004
LCD MENU			X	X
CUSTOM CABLE	X	X	X	X

## No Risk Money Back Guarantee

Call Us Today and we'll send you a full-size sample plot and tell you about our 1 year reliability warranty and our customer support program which includes complete product satisfaction or your money back within 10 days of purchase. We'd like to win you over as a Zericon customer. And we've got the products and service to do it. Give us a call. Zericon,

Inc., 40491 Encyclopedia  
Circle, Fremont,  
CA 94538.

In CA (415) 490-8380.  
FAX (415) 490-3906.



## (800) 727-8380

Japanese Warrior created on the Zericon Z4000 A-E

# ZERICON

*More plotter. Not more money.*

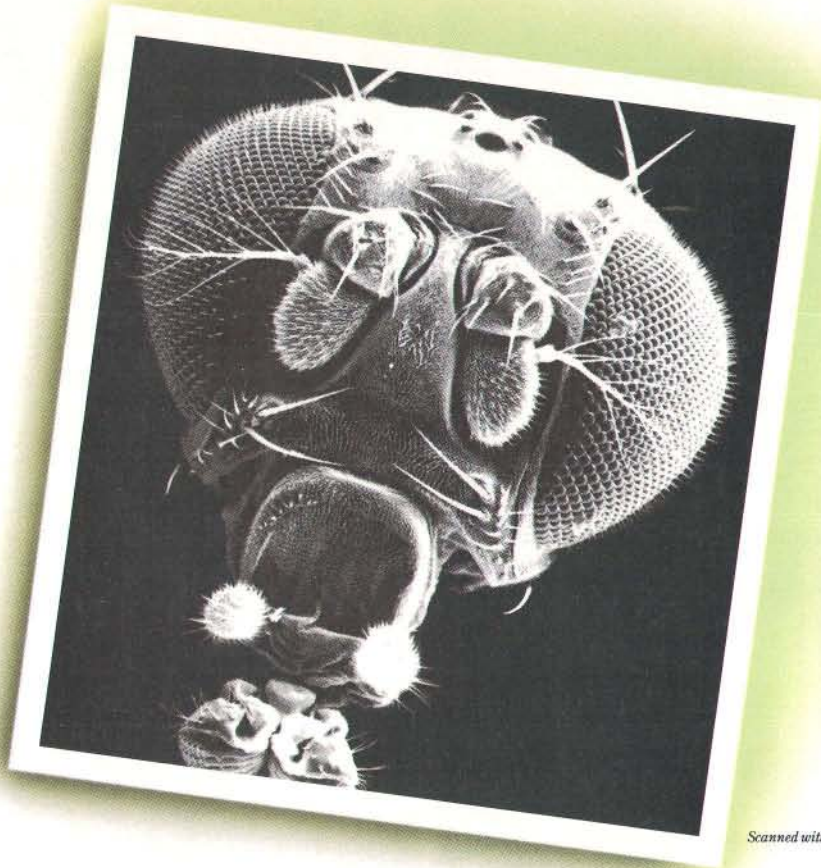
Circle 118 on Reader Service Card for Immediate Response

Circle 267 on Reader Service Card for Literature

Made in USA



# 8-bit upgrades invade Apple scanner.



*Scanned with the Abaton 8-bit Upgrade*

## Get all the gory details.

In as few as thirty minutes, an 8-bit Abaton Upgrade can invade your Apple scanner. Leaving you with more detail in your scanned images than before. Because Abaton's 8-bit Upgrade lets your 4-bit Apple scanner read 240 more shades of gray than the current 16. So your black and white images have all the rich details found in your original photos.

And this invasion won't be a nightmare. Just place your order, and within 48 hours, a technician will call to schedule an upgrade encounter at your home or office. There's no risk, since your upgraded scanner is covered for 90 days.

Or you can extend the warranty to suit your needs.

But best of all, the Abaton 8-bit Upgrade makes it easier for you to publish. You can see every page before it's sent to a phototypesetter. And that's a publishing plus.

If you want all the gory details on Abaton's 8-bit Upgrade invasion, call Abaton at 1-800-444-5321, and let Abaton make your ideas easier to publish.

**Abaton**

*We Make Your Ideas Easier to Publish™*



Abaton and "We Make Your Ideas Easier to Publish" are trademarks of Everex Systems, Inc. Other brand names and product names are trademarks and registered trademarks of their respective companies.

Dealers circle 289 on reader service card  
End users circle 294 on reader service card



# UPDATES

Here's our list of the current shipping versions of Mac software. Because these days, keeping track of the latest CPU is tough enough.

**Canvas version 2.1** has enhanced bezier curves, editable dashed lines, a 100,000-word spelling checker, and an improved alignment manager. The new version imports MacDraw II native format files, exports EPS files, and features a four-color process-separation utility. Deneba Software, 7855

N.W. 12th St., #202, Miami, FL 33126; 305/594-6965. Contact dealer for upgrade policy; \$299.95 new.

**Freedom of Press version 2.2** is able to accept Adobe Systems' encrypted Type 1 fonts. CAI, 900 Technology Park Dr., Bldg. 8, Billerica, MA 01821; 508/667-8585. Upgrade \$45 for registered owners; \$495 new.

**MacTerminal version 2.31** extends MacTerminal's capabilities to include sup-

port for the Mac IICI and Mac Portable. Apple Computer, 20525 Mariani Ave., Cupertino, CA 95014; 408/996-1010. Upgrade free for registered owners; \$125 new.

**Virex version 2.3** now enables users to set a password so that only authorized personnel can change settings. This version also combats WDEF virus. HJC Software, P.O. Box 51816, Durham, NC 27717; 919/490-1277. Contact dealer for upgrade policy; \$99.95 new.

## PRODUCT COMPARISON

Product	V.	Req.	Rev.	Price
1st Aid Kit *	2.8	512K/3.0		*
4th Dimension	2.0	1MB/6.02	3/90	*
Aatrix	2.01	512K/4.1		\$10
CheckWriter II *				
Aatrix	2.0	512K/4.2		Free
TimeCard				
Accountant Inc.	2.1	1MB/6.02		\$9.50
AccuText *	1.1	4MB/6.02		*
AdWriter	2.0	1MB/6.0		Free
Alchemy	1.1	1MB/6.0	1/89	\$25
Aldus	2.0	1MB/6.03	6/89	*
FreeHand				
Aldus	2.02	1MB/4.1		*
PageMaker				
Aldus	2.0	1MB/6.0	6/89	*
Persuasion				
AmPack Plus *	4.2.2	512K/3.2	1/90	\$29.95
Analog Connection	3.0	1MB/5.0		\$50
WorkBench				
Anatool *	3.1	512K/3.0	7/89	\$35
AntiToxin	1.2	512KE/4.2	2/90	Free
APL68000	7.0	512K/3.2		*
AppleShare	2.0	512K/3.2		*
File Server				
Archie	2.0	1MB/6.0		\$75
ArchiText	2.0	1MB/6.02	7/89	Free
Aristotle's	2.0	2MB/6.03		Free
Politics				
The Art	2.0	1MB/6.0	8/89	\$20
Importer				
ArtRoom	3.0	512K/3.2		\$199
AutoCalc	2.0	1MB/6.0		\$95
Aztec C	3.6	512KE/4.2		*
Back to Basics:	2.0	512K/3.2		\$75
Professional				
Ball & Stick *	2.2	1MB/6.0		Free
Bill-It	2.0	1MB/6.03		\$28
Bridge	6.0	512K/3.2		\$17

Product	V.	Req.	Rev.	Price
Business	1.5	1MB/6.02		*
FileVision *				
Business	1.2	1MB/6.0		*
Sense *				
Business	3.2	512K/3.2		Free
Session *				
CA-Cricket	2.0	1MB/6.0		Free
Presents				
Calculator	2.06	512K/3.2	4/90	\$25
Construction Set *				
Canvas	2.1	1MB/6.0	4/89	*
Capture	2.0	1MB/6.0	2/90	\$15
ChromaScan	1.1	4MB/6.02		Free
Colorset *	1.2	1MB/6.0		Free
Comment	2.02	1MB/6.0	2/89	*
Commtact	2.0	1MB/6.0		Free
CompileIt	1.2	1MB/6.02		Free
CompuServe	2.1	512K/3.2		*
Navigator *				
Control	1.5	1MB/4.1		Free
Cue	3.0	1MB/6.03		*
DataDesk	3.0	512K/4.02		\$125
DataMerge	2.0	512K/3.2		Free
Deluxe Music	2.5	512K/6.02	9/89	*
Construction Set				
D.E.S.	4.0	1MB/6.0		*
Design	2.15	5MB/6.03		Free
Dimensions *				
DeskPaint *	2.1C	512KE/4.2		Free
DiagramMaker *	1.1	1MB/6.02		*
Digital Darkroom	1.1	1MB/6.02		Free
DiskFit	1.5	512K/4.1		*
Network DiskFit *				
DiskTop	4.0	1MB/6.0		*
Display	1.1	1MB/6.03		*
AdBuilder				
Dollars	4.1	512KE/3.2		*
and Sense				

Product	V.	Req.	Rev.	Price
DragonWave	1.1	1MB/6.03		*
Empower *	2.05	1MB/5.0	6/89	Free
EndLink	1.1	512K/3.2		Free
EndNote	1.2	512KE/3.2	6/89	Free
Extender	3.0	1MB/6.02		\$30
GrafPak				
Falcon	2.1	1MB/3.2		Free
Fastback II	2.1	512KE/4.1	12/89	\$25
Fast Forms *	1.2	512K/3.2		\$25
Ferrari	1.6	512K/3.2		\$10
Grand Prix *				
FileMaker II *	1.1	1MB/4.2		*
Finale *	1.2	1MB/6.02		Free
Financial	3.0	512K/3.0		*
Analysis				
Findswell	2.0	512KE/3.2	3/90	*
Fontographer	3.0	1MB/6.0		*
FontShare	2.0	1MB/6.0		Free
FoxBase+/Mac *	2.10	1MB/6.0		\$75
Freedom	2.2	1MB/6.0		Free
of Press *				
FreeFlow	3.0	1MB/6.03		Free
Full Impact *	1.1	1MB/6.0		Free
FullWrite	1.1	2MB/6.02		Free
Professional *				
Gofer *	2.01	1MB/4.1		\$25
Grafpoint	2.0	2MB/6.0		*
Help DA	3.0	1MB/6.0		Free
HFS Backup	3.0	512K/3.2	8/89	\$35
Hybase *	1.1	1MB/6.0		Free
HydroMac	2.0	1MB/6.0		*
HyperAnimator *	1.5	1MB/6.03	6/89	\$29.95
HyperCard *	1.2.2	1MB/6.03		\$10
HyperDA *	1.2	512K/3.2		\$10
HyperEngine	1.1	1MB/6.03		Free
Developer's Tool *				
HyperLibrary	2.0	1MB/5.0		*

(continues)

**Bold** = first time the product is being listed.

\* = minor update.

**Req.** = min. RAM and system software required.

**Rev.** = last time (in past year) reviewed this or an earlier version.

**Price** = cost for update to registered owners.

\* = contact your dealer for update policy.



# Invest In Futures.



There's probably no greater return on an investment than when you give to the Boys & Girls Club. You'll be helping the Club provide the guidance and inspiration young girls and boys need to achieve success for themselves and progress for America.

Make a contribution today, so they can make one tomorrow.



**BOYS & GIRLS CLUB**

**The Club that beats the streets.**

## PRODUCT COMPARISON

Product	V.	Req.	Rev.	Price	Product	V.	Req.	Rev.	Price
HyperPort	2.0	1MB/6.0		\$10	MacProject II	2.0	1MB/6.0	8/89	*
Chess					MacProof ★	3.2.1	1MB/6.02	2/90	\$30
HyperWindows ★	1.1	1MB/6.02		Free	MacRecorder	2.0	512K/3.2	12/89	*
Icon-It ★	1.2	1MB/6.0		*	MacSchedule	2.0	1MB/6.0		\$30
Iconia ★	7.0	1MB/6.0		*	MacSmarts	3.0	1MB/6.0		*
Igor ★	1.1	1MB/6.0		Free	MacTell	3.5	512K/3.0		*
ImageStudio	2.0	1MB/6.0		Free	MacTerminal ★	2.31	512K/3.2		Free
ImageWriter LQ	2.0	512K/3.2		Free	MacVision	3.0	1MB/6.0	7/89	\$79.95
Print Driver ★					MacWrite II	1.1	1MB/6.0		Free
In-CAD	2.0	2MB/6.0		*	Managing	2.0	512K/6.03		\$49.95
InfoLogic	6.0	512KE/4.0		\$5	Your Money				
Envelope ★					MapGrafix	2.0	4MB/6.03		Free
Insight Expert	2.2	1MB/6.0		*	MarketMaster	II+	1MB/6.03		\$25
Accounts Payable					Master	4.0	1MB/4.1		\$45
Insight Expert	2.2	1MB/6.02		*	Tracks Pro				
Accounts Receivable					MathType	2.0	512K/6.02	11/89	*
Inspiration	2.0	1MB/4.2		Free	Matlab	1.2	1MB/3.0		*
Instant-Expert	3.0	1MB/5.0		Free	MaxPage ★	1.2	512K/3.2		Free
Plus					McMax	2.0	1MB/5.0	8/89	*
JetLink Express ★	1.01	1MB/6.0		Free	Memorybank	3.0	1MB/6.0		Free
KidsTime ★	1.2	512K/3.2		\$15	Manager				
KiwiEnvelopes	3.0	512KE/4.1		\$10	MGMStation ★	2.5	512KE/3.0	4/89	*
Language Systems	1.2	1MB/6.03		*	Microsoft File	4.0	512K/3.2	4/89	*
Fortran Compiler ★					Microsoft Mail	2.0	1MB/6.02	1/90	*
LapLink Mac	2.0	512K/2.0		Free	Microsoft Word	4.0	512KE/3.2	10/89	*
LaserPaint	1.02	1MB/6.03		Free	Microsoft Works	1.2	512K/6.0	4/89	*
Color II ★					MindWrite ★	2.1	512KE/4.2		*
LetrTuck+	2.0	512K/3.2		\$20	MiniCad +	2.0	1MB/6.0	11/89	*
Lookup	2.0	1MB/6.0		*	MiniDraw	4.0	512KE/4.2		\$17
Mac86	2.0	1MB/6.02		\$10	MockPackage Plus	4.4	512KE/3.2		\$15
Mac286	2.0	1MB/6.02		\$10	Utilities				
Mac3270	2.0	1MB/6.03		*	Modern Artist	2.0	2MB/6.02		\$150
MacArchtrion	4.0	2MB/6.03		Free	Monte Carlo	2.0	1MB/6.03		\$60
MacAtlas	2.0	512K/3.2		\$35	More II ★	2.01	1MB/4.1	6/89	Free
Paint					MSFL: Pro League	2.0	1MB/6.0		*
MacClint ★	1.1	1MB/5.0		Free	Football				
MacConcept	3.0	1MB/6.03		*	MultiLedger ★	1.1	512K/3.2		Free
MacDesigner	2.0	1MB/3.2		\$297	Multi-User	3.01	512K/3.2		*
MacDraw II	1.1	1MB/6.0		*	Appointment Diaries				
MacEnvelope	4.1	512K/3.2		*	Music	2.0.3	1MB/6.0		Free
MacFalcon	2.1	1MB/6.03		*	Publisher				
MacFlow	3.0	1MB/6.03		\$30	MyTimeManager	2.0	1MB/6.0		*
MacFortran	2.4	512K/4.2		*	Navigate	2.0	1MB/6.0		Free
MacFortran/020	2.4	512K/4.2		*	Nemesis Go	4.0	512K/4.1	6/89	*
MacFortran	1.1	2MB/6.02		Free	Master				
for MPW					The NightWatch ★	1.03	512KE/3.2		*
MacHerbal	2.0	512K/3.2		\$49	Nisus	2.0	1MB/6.02	9/89	Free
MacHotel	3.3	1MB/6.03		Free	NuPaint ★	1.04	512K/3.2	5/89	Free
MacLine	3.0	512K/3.0		\$25	Nutrition	2.0	1MB/6.02		\$20
MacLinkPlus/	4.0	512KE/3.2		\$45	Stack				
Wang VS					OmniPage	2.0	4MB/6.02	2/90	\$150
MacMainFrame	2.1	2.5MB/6.02		\$100	Omni 3 Plus/	2.0	512KE/3.2		*
3270/CUT					Express				
MacPhonebook	2.0	512KE/3.2	1/90	*	On Schedule	2.0	1MB/3.0		*
MacPrint	1.1	1MB/6.02		Free					

(continues)



# DATA STORAGE

- SCSI Hard Disks
- DAT & Removable
- Streaming Tape
- Rewritable Optical
- 20 MB to 2,022 MB
- Fast as 5.4 ms

*MicroNet offers a wide range of Macintosh storage products that easily match any configuration.*

*We specialize in MacWren hard disks that are industry known for their performance and reliability. Our Overlapped Seek Systems offer access times as fast as 5.4 ms.*

*MicroPak Transportable hard disk drives are cost effective and are popular for transporting data between computers.*

*Don't choke your IIcx/IIci with a 3.5" hard disk! Our unique 5.25" internal systems are 66% faster than a 3.5" Quantum hard disk.*

*Our Optical Systems allow you to have nearly 600 MB of rewritable storage on one disk. These M/O systems have the best access time and the highest transfer rate of all.*

*For serious data backup we offer 1.3 GB Digital Audio Tape, Streaming Tape to 525 MB and our 20 ms, 45 MB SyQuest Removable Winchester Cartridge System.*

*Call for data sheets and the name of your nearest dealer.*

**"QUALITY YOU CAN COUNT ON"**

Macintosh, SyQuest and Quantum are registered trademarks

**We offer the finest in Internal and External Hard Disk Drive Systems from 20 MB to 2,022 MB, Tape Backup to 525 MB, 45 MB Removable Cartridge, DAT and Rewritable Optical Systems.**



## MicroNet Technology, Inc.

20 MASON • IRVINE, CA 92718 • TELEPHONE: (714) 837-6033  
FAX: (714) 837-1164 • APPLELINK: D1656 • COMPUSEVE: 76004,1611 • CONNECT: MICRONET  
Circle 398 on reader service card



# One Of America's Best Run Companies Gives 95% Of Its Money To Charity.

CARE was recently named the best run, best managed charity in America.

We aren't surprised. 95% of every dollar we receive goes to help impoverished people. Only 5% goes to run our organization.

No other company could survive on margins like that. But a lot of starving people can.

# CARE

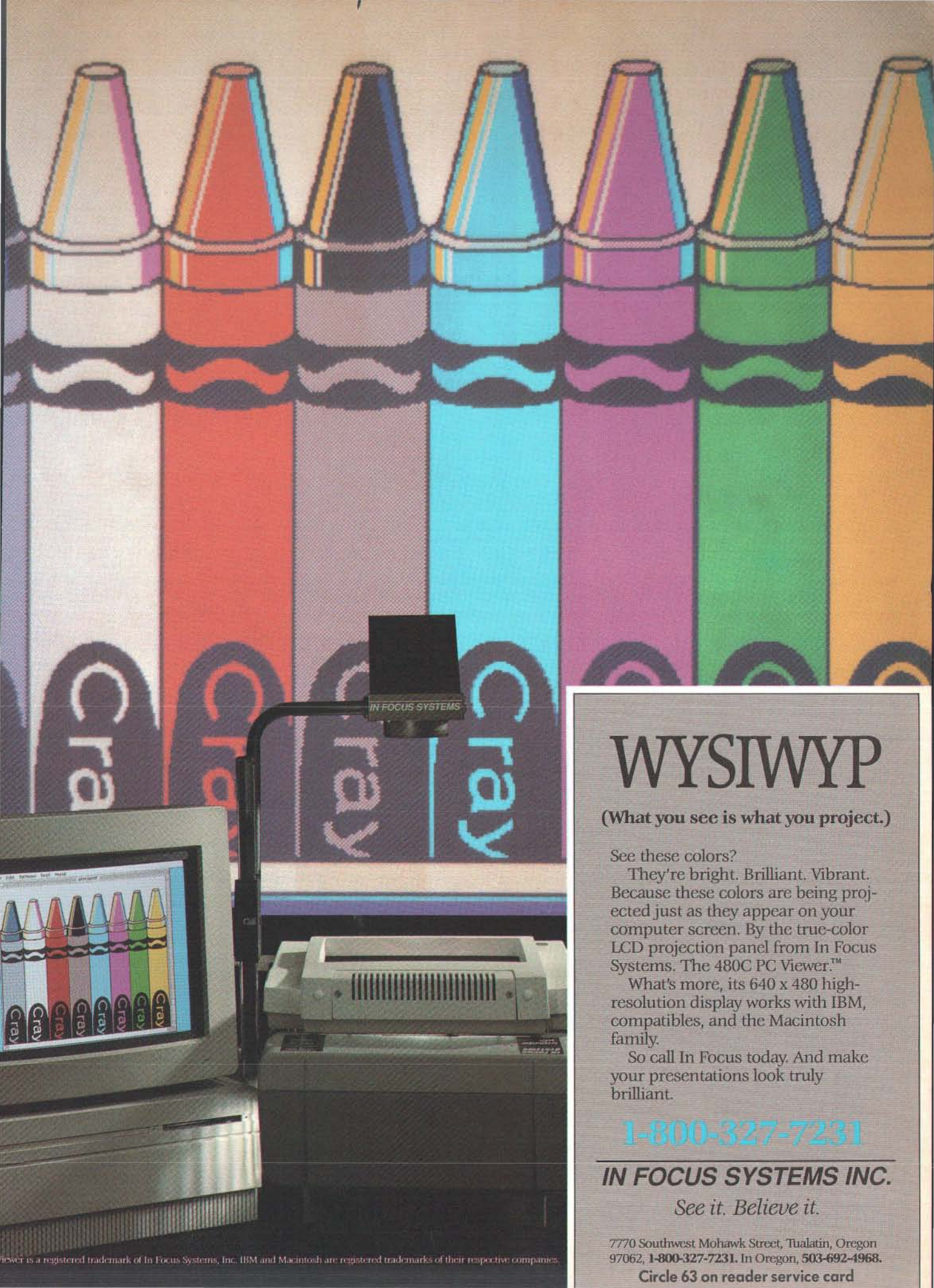
We're Helping People  
Learn To Live Without Us.  
1-800-242-GIVE

## PRODUCT COMPARISON

Product	V.	Req.	Rev.	Price	Product	V.	Req.	Rev.	Price
P51 Mustang Flight Simulator	2.04	512K/3.2	4/89	\$10	SmartScrap & The Clipper	2.0	1MB/6.03	8/89	\$20
PacerLink	5.0	512K/5.0	*		Snap *	3.1	1MB/3.0	9/89	*
Panorama	1.1	1MB/4.2	5/89	Free	SoftPC Mac *	1.3	2MB/6.0		*
PEGASYS II	3.2	1MB/6.03		Free	Sound Designer	1.5	512K/6.03		\$45
Performer	3.2	1MB/6.0		Free	Universal *				
Sequencer *					Spellsowell *	2.3	512K/3.2		*
Personal	2.0	512K/3.2	2/90	Free	Springboard	2.0	1MB/6.0		*
Golf Stats					Publisher				
Personal	2.0	1MB/6.0		\$10	Stepping Out II	2.0	1MB/4.1	4/89	Free
Reference Catalog					StickyBusiness	1.06	512KE/6.03		Free
PICT Detective	2.0	512KE/6.0		\$20	Still Light	3.0	1MB/6.0		Free
PixelPaint *	1.2	2MB/4.1		Free	StrataVision 3d *	1.02	2MB/6.03		Free
Plains & Simple *	1.06	1MB/3.2		*	Suitcase II	3.0	512KE/4.1	10/89	\$25
PowerDraw	3.0	1MB/6.0		*	Super 3d	2.0	512KE/6.02	10/89	\$200
PowerStation *	2.5.2	512K/4.1		Free	SuperGlue II with GlueNotes	2.1	1MB/6.0	1/90	*
PowerTools	3.0	4MB/6.0		*	SuperLaserSpool	2.0	512K/4.1		\$20
Practica Musica	2.1	512K/3.2		\$10	SuperPaint	2.0	1MB/6.02	8/89	\$50
Printer	2.0	512K/6.02		\$22.50	SuperSpool	5.0	512K/4.1		\$20
Interface III					Synchronicity	2.0	512KE/3.2	12/89	\$5.00
Pro-Cite *	1.3	512K/4.1		*	Systat *	3.2	1MB/6.0		\$75
Professional	2.3	1MB/6.03		Free	Teacher's Rollbook *	2.2	512K/3.2		\$17.95
Composer					Ternary Plot	3.0	512K/3.2		*
Professional	2.0	1MB/6.0		\$22	TextPart *	3.01	1MB/6.0		Free
Image II					Think C	4.0	1MB/5.0	2/90	*
PropsForms	2.0	1MB/6.03		Free	Timbaktu	3.0	1MB/4.1		Free
Prototyper *	2.01	1MB/4.1	9/89	\$79	TimeMinder	2.0	1MB/4.2	9/89	\$50
Publish or Perish	3.0	512KE/3.2		\$10	Timeslips III	1.2	512KE/4.2	2/90	\$50
Pyro *	3.31	512K/4.1		\$10	TML Pascal II	3.0	1MB/5.0	6/89	\$79.95
QuarkXPress	2.1	1MB/6.02	1/89	*	TMON *	2.8.1	512K/4.0		*
Quicken *	1.5	512K/3.2	1/90	*	TOPS/Mac	2.1	512K/3.2		*
QuickLetter *	1.01	512KE/3.2	10/89	Free	Trapeze *	2.1	1MB/6.0		\$35
QuickMail	2.0	512KE/3.2		*	TrueBASIC *	2.02	1MB/6.0		Free
QuickShare	2.0	512KE/3.2		\$75	TrueForm *	1.1	1MB/6.2	4/90	Free
QuickShot *	2.1	1MB/4.2		\$5	Turbosynth	2.0	1MB/6.03		\$35
Read-It OCR	2.1	1MB/6.03	12/89	*	UNITue *	1.3	512KE/3.2	10/89	\$20
Reports *	1.2	1MB/6.0		Free	VersaCAD/ Macintosh Edition *	2.11	1MB/6.0		Free
Retail Engine	3.0	1MB/6.0		*	Virex *	2.2	1MB/4.2	1/90	*
Sales Associate	1.10	1MB/6.03		Free	Virtual	2.0	1MB/3.2	10/89	Free
SAM	1.1	512KE/3.2	12/89	*	VMacS	2.0	1MB/6.0		\$25
ScheduleMaker	3.0	1MB/6.0		\$25	Wall Street Investor	3.0	1MB/5.0		\$150
ScreenSnap *	2.2	1MB/4.2		*	Wingz *	1.1	1MB/6.0	6/89	Free
ScriptEdit	1.1	1MB/6.04		*	Word Finder	2.0	512K/3.2		*
Sentinel	2.0	512K/4.1		\$20	WordPerfect for the Macintosh *	1.0.3	1MB/4.2		Free
Shanghai	2.0	1MB/6.02	2/90	\$13	WorksPlus	2.0	1MB/6.03	1/90	*
SimpleSpan	2.5	512K/3.2		*	Spell				
Smart Alarms	2.9.1	512K/3.2		\$12	WriteNow	2.0	512K/3.2	5/89	*
SmartForm	1.1	1MB/6.0	7/89	Free					
Assistant *									
SmartForm Designer	1.1	1MB/6.0	7/89	Free					

To have products listed in this section, send upgraded software, an outline of changes since the previous release (indicate if it's a maintenance upgrade), upgrade price, minimum RAM and system software, suggested retail price, company name, mailing address, and phone number to *Updates*, Macworld, 501 Second St., San Francisco, CA 94107.





# WYSIWYP

(What you see is what you project.)

See these colors?

They're bright. Brilliant. Vibrant. Because these colors are being projected just as they appear on your computer screen. By the true-color LCD projection panel from In Focus Systems. The 480C PC Viewer.™

What's more, its 640 x 480 high-resolution display works with IBM, compatibles, and the Macintosh family.

So call In Focus today. And make your presentations look truly brilliant.

**1-800-327-7231**

**IN FOCUS SYSTEMS INC.**

*See it. Believe it.*

7770 Southwest Mohawk Street, Tualatin, Oregon 97062, 1-800-327-7231. In Oregon, 503-692-4968.

Circle 63 on reader service card



**Go beyond  
New York,  
Venice, and  
Geneva**

**for  
only  
\$99.**

Now that Adobe Type Manager™ is opening up a whole new world of type to every Macintosh® user, it's time to venture beyond the standard fonts—like New York, Venice and Geneva.

Introducing the Adobe Type Set™ font packages. Each sells for just \$99 and includes seven carefully chosen fonts worth hundreds of dollars if we sold them separately. So your dollar goes further than ever.

But the really far-reaching news is what happens when you combine ATM™ with the Adobe Type Sets. For starters, you'll get printed text that more closely matches your screen image—even from a low resolution, dot matrix printer like the ImageWriter®. If you're an Apple LaserWriter® or other Adobe PostScript® printer owner, you'll be amazed at how your screen type can be scaled to virtually any size, on the fly, and still look smooth and legible.

So if you've been tempted to explore the wonderful world of fonts, this is your chance to travel first class. With a select group from the Adobe®  
**ADOBE®**  
Type Library.

---

Adobe Type Set 1:

**Hobo**  
**TRAJAN™**  
**Bodoni Poster**  
*Freestyle Script*  
**VAG Rounded Bold**  
**COTTONWOOD™**  
*Linotext\**

---

---

Adobe Type Set 2:

**Franklin Gothic®**  
*Present\* Script*  
**LITHOS™ BOLD**  
**PEIGNOT\* DEMI**  
**Cooper Black**  
**JUNIPER™**  
**COPPERPLATE**

---



# WHERE TO BUY

This listing provides companies and phone numbers for products mentioned in this issue.

Allow several weeks for responses to reader service card inquiries.

Asterisks indicate vendors who prefer to be contacted by phone.

## Reader Service

- 701 **3DWorks/RenderWorks**  
MacroMind, Inc.;  
415/442-0200.

## A

- 702 **America Online** Quantum  
Computer Services, Inc.;  
703/448-8700,  
800/227-6364.
- 703 **The Animation Stand**  
Linker Systems, Inc.;  
714/552-1904.
- 704 **ArchText** BrainPower,  
Inc.; 818/707-1712,  
800/345-0519.
- 705 **Audiomedia** Digidesign,  
Inc.; 415/327-8811,  
800/333-2137.
- 706 **Authorware Professional**  
Authorware, Inc.;  
612/921-8555.
- 707 **AVID/1 Media Composer**  
Avid Technology, Inc.;  
617/221-6789.

## B

- 708 **The Big Picture** E-  
Machines, Inc.; 503/646-  
6699, 800/344-7274.
- 709 **BigTime TV** Hyperpress  
Publishing Corp.;  
415/345-4620.

## C

- 710 **Calculator Construction Set**  
Dubl-Click Software, Inc.;  
818/700-9525.
- 711 **ClearVue/II Display System,**  
**ClearVue/SE Display System**  
RasterOps Corp.; 408/  
562-4200, 800/468-7600.

## Reader Service

- 713 **ColorBoard 224, ColorBoard 232, ColorBoard 264** RasterOps Corp.; 408/562-4200, 800/468-7600.
- 716 **Color Capture** Data Translation, Inc.; 508/481-3700.
- 717 **ColorSnap-32** Computer Friends, Inc.; 503/626-2291, 800/547-3303.
- 719 **ColorSpace II, ColorSpace FX** Mass Microsystems, Inc.; 408/522-1200, 800/522-7979.
- 720 **Complete Undelete** 1stAid Software, Inc.; 617/783-7118, 800/843-3497.
- 721 **Computer Eyes, Computer Eyes Pro Color Digitizer** Digital Vision, Inc.; 617/329-5400.
- 722 **Course Builder** Tele-robotics International, Inc.; 615/690-5600.
- 723 **Crystal View SE Display System, Crystal View II Display System, Crystal View SE-30 Display System** Taxan USA Corp.; 408/946-3400, 800/829-2641.

## D

- \* **D5-SCX Video Scan Converter** Dimension 5, Inc.; 503/293-7775.
- 724 **DataFrame XP100** SuperMac Technology; 408/245-2202.
- 725 **DeskPaint and DeskDraw** Zedcor, Inc.; 602/881-8101, 800/482-4567.
- 726 **Digital Darkroom** Silicon Beach Software, Inc.; 619/695-6956.
- 727 **DirectDrive 130** Jasmine Technologies, Inc.; 415/282-1111.
- 728 **Double Helix** Odesta Corp.; 312/498-5615, 800/323-5423.
- 729 **DO-Animax** Diaquest, Inc.; 415/527-7700.

## E

- 730 **Electric Image Animation System** Electric Image;

## Reader Service

- 312/498-5615,  
800/323-5423.
- 731 **Enhance** MicroFrontier, Inc.; 515/270-8109, 800/388-8109.

## F

- 732 **FrameGrabber 324NC** RasterOps Corp.; 408/562-4200, 800/468-7600.
- \* **Fujitsu RX7100PS** Fujitsu America, Inc.; 408/432-1300.

## FONTS

- 733 18+ Fonts; 708/980-0887.
- 734 Adobe Systems, Inc.; 415/961-4400, 800/833-6687.
- 735 Agfa Compugraphic; 508/658-5600, 800/822-5524.
- 736 Allotype Typographics; 313/663-1989.
- 737 Alphabets, Inc.; 312/328-2733.
- 738 Altsys Corp.; 214/424-4888.
- 739 Bitstream Inc.; 617/497-6222.
- 740 Casady & Greene, Inc.; 408/624-8716, 800/359-4920.
- 741 Casey's Page Mill; 303/220-1463, 800/544-5620.
- 742 Davka Corp.; 312/944-4070, 800/621-8227.
- 743 Devonian International Software Co.; 714/621-0973.
- 744 Dubl-Click Software, Inc.; 818/700-9525.
- 745 Eastern Language Systems; 801/377-4558.
- \* Ecological Linguistics; 202/546-5862.
- 746 EmDash; 312/441-6699.
- 747 Emigre Fonts; 415/845-9021.
- 748 The Font Company; 602/996-6606, 800/442-3668.
- 749 Font World; 716/235-6861.
- 750 Giampa Textware Corp.; 604/253-0815, 800/663-8760.

## Reader Service

- 751 Ingrimayne Software; 219/866-6241.
- 752 Judith Sutcliffe: The Electric Typographer; 805/966-7563.
- 753 Kingsley/ATF Type Corp.; 602/325-5884, 800/289-8973.
- 754 Letraset Graphic Design Software; 201/845-6100, 800/343-8973.
- 755 LetterPerfect; 201/845-6100, 800/343-8973.
- 756 Linguist's Software, Inc.; 206/775-1130.
- 757 Linotype Company; 516/434-2000, 800/633-1900.
- 758 MacTography; 301/424-3942.
- 759 Monotype Typography, Inc.; 312/855-1440, 800/666-6893.
- \* NeoScribe International, Inc.; 315/853-4427.
- \* Page Studio Graphics; 602/839-2763.
- 760 Springboard Software; 612/944-3915, 800/445-4780.
- 761 Studio 231; 516/785-4422.
- 762 Tactic Software; 305/378-1110, 800/344-4818.
- 763 T/Maker Co.; 415/962-0195.
- 764 Treacyfaces, Inc.; 215/896-0860.
- 765 Varityper; 201/887-8000.
- 766 Zipatone TypeXpress; 708/449-5500.

## G

- 767 **Genlock Converter** Julian Systems, Inc.; 415/686-4400.
- 768 **Grayscale/Monochrome Display** SuperMac Technology; 408/245-2202.
- 769 **GS II, GS 30** Generation X Technologies, Inc.; 408/739-4570, 800/448-8231.
- 771 **Guide** OWL International,

(continues)



# Colorful

8-Bit Color  
For \$495.

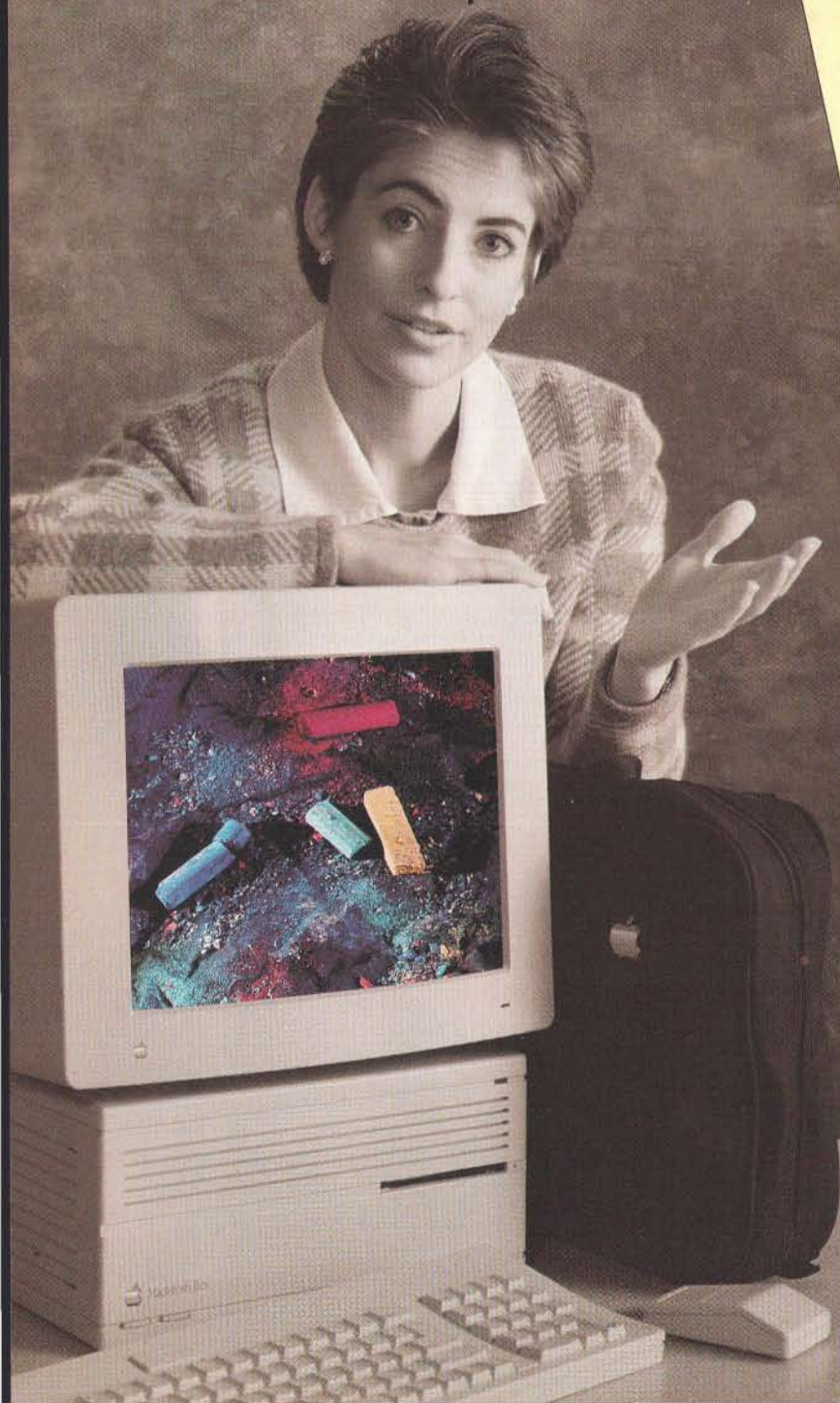
*“Let’s face it.  
The world is not  
black and white.  
And why should it be  
when RasterOps  
can bring color  
to the Macintosh  
for less than \$500.”*

Finally, you can display 8-bit color on any Macintosh-compatible 640 x 480 monitor . . . without taking out a bank loan.

It’s called the RasterOps ColorBoard 208.

And it ushers your Macintosh into a world of brilliant color. Depending on your needs, the ColorBoard 208 allows you to select color modes of 2, 4, 16 and 256 colors.

What’s more, if you ever need 24-bit color, RasterOps protects your investment. By merely adding RasterOps’ user-installable memory modules to the ColorBoard 208’s existing sockets, you can upgrade to the ColorBoard 264. And in a matter of minutes you’ll be working with 24-bit color.





# Impact.

*“I need 24-bit color  
that screams.  
RasterOps broke  
technology barriers  
to deliver the  
world's most advanced  
True Color board.  
It's great!”*

24-Bit Color  
Now \$795.

Simply stated, the ColorBoard 264 has revolutionized the state of 24-bit color on the Macintosh. In addition to its unbeatable price, the ColorBoard 264 represents the most advanced VLSI design ever offered. It's the fastest read/write cycle possible on a Macintosh, thanks to a video interface that provides 300 nanosecond cycles.

And the ColorBoard 264 offers dynamic support for your photorealistic images. You can instantly see the effects of the changes you make to your color image.

Now that you can afford True Color, use your Macintosh to make a colorful impact!

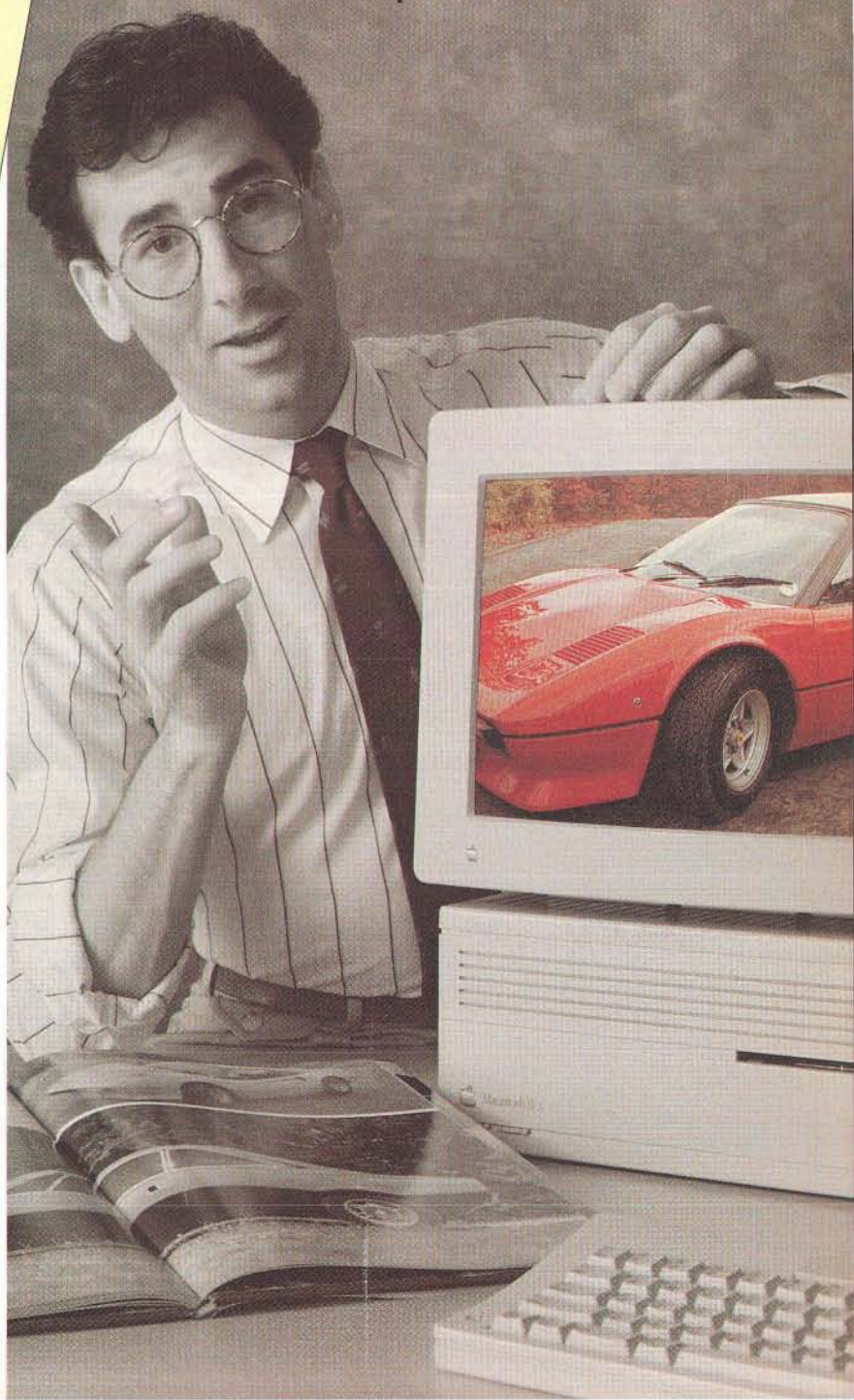
**RasterOps®**

*“We're changing the way people look at computers.”*

2500 Walsh Road, Santa Clara, CA 95051 USA

Copyright 1990 RasterOps Corporation. RasterOps and ColorBoard are trademarks of RasterOps Corporation. All other brand names are protected by the trademark holder.

**Call RasterOps HOTLINE 1-800-468-7600  
for more information.**





Reader Service

Inc.; 206/747-3203.

H

- 772 **HandOff** Software Innovations, Inc.; 214/727-2329.
- 773 **High Resolution Monochrome Monitor** Apple Computer, Inc.; 408/996-1010.
- 774 **HyperAnimator** Bright Star Technology, Inc.; 206/451-3697.
- \* **HyperCard Videodisc Toolkit** APDA-Apple Computer, Inc.; 800/282-2732.
- 775 **HyperVision** Pixelogic, Inc.; 617/938-7711.

I

**Image** Public domain.

- 776 **ImageStudio** Letraset Graphic Design Software; 201/845-6100, 800/343-8973.
- 777 **In/Out** CE Software, Inc.; 515/224-1995.
- 778 **Interactive Teacher** American Intellware Corp.; 213/533-4040.
- 779 **interFACE** Bright Star Technology, Inc.; 206/451-3697.

K

- 780 **KaleidaGraph** Synergy Software, Inc.; 215/779-0522.
- 781 **The Kurta Studio for Aldus Products** Kurta Corp.; 602/276-5533, 800/445-8782.

L

- 782 **Leprechaun** Shodan; 415/849-9475.
- 783 **L-View** Sigma Designs; 415/770-0100, 800/933-9945.

M

- 784 **MacCalc** Bravo Technologies, Inc.; 415/841-8552.
- 785 **MacinStor 100-ZFP** Storage Dimensions, Inc.; 408/879-0300.
- 786 **MacMovies** Lapis Technologies, Inc.; 415/748-1600.
- 787 **MacPhotography Workshop** Joseph Ciaglia, Photographer; 215/985-1092.
- 788 **MacRecorder** Farallon Computing, Inc.; 415/596-9100.
- 789 **MacroMind Director,**

Reader Service

- MacroMind Director Accelerator** MacroMind, Inc.; 415/442-0200.
- 791 **MacSprint II** Orchid Technology; 415/683-0373, 800/767-2443.
- 792 **MacVision** Koala Technologies; 408/287-6311.
- 793 **Media Tracks** Farallon Computing, Inc.; 415/596-9100.
- 794 **MegaScreen 2008, MegaScreen 3008, MegaScreen SE/3001 Rival** MegaGraphics, Inc.; 805/484-3799, 800/423-0183.
- 797 **Mentor/MacVideo** Edudisc, Inc.; 615/373-2506.
- \* **Microsoft File** Microsoft Corp.; 206/882-8080, 800/426-9400.
- 798 **MicroTV** Aapps Corp.; 408/735-8550.
- 799 **Midas I** Seehorn Technology, Inc.; 408/998-7961.
- 800 **Moonraker** Workstation Technologies, Inc.; 714/250-8983.
- 801 **MusicProse** Coda Music Software; 612/854-1288.

N

- 802 **NEC Monograph System** Relax Technology; 415/471-6112, 800/848-1313.
- 803 **Neotech Image Grabber** Advent Computer Products, Inc.; 619/942-8456.
- 804 **NTSC Converter** Orange Micro, Inc.; 714/779-2772, 800/223-8029.
- 805 **NTSC Converter for Macintosh II** Julian Systems, Inc.; 415/686-4400.
- 806 **Nutmeg 19, Nutmeg/Xerox Full Page Display** Nutmeg Systems, Inc.; 203/966-3226, 800/777-8439.
- 808 **Nuts & HyperBolts** Sterling Swift Software; 512/280-2431.
- 809 **NuVista 1MB System, NuVista 2MB System** Truevision, Inc.; 317/841-0332, 800/858-8783.
- 811 **NuVista 4MB System** Truevision, Inc.; 317/841-0332, 800/858-8783.

P

- 812 **PageView** Sigma Designs; 415/770-0100, 800/933-9945.
- 813 **Personal Vision** Orange Micro, Inc.; 714/779-2772,

Reader Service

- 800/223-8029.
- 814 **Personal Writer PW10 SL** Personal Writer, Inc.; 213/556-1001, 800/322-4744.
- 815 **PhotoPress** Blue Solutions, Inc.; 805/371-4521.
- 816 **PixelGrabber** Perceptics; 615/966-9200.
- 817 **Portrait Display** Apple Computer, Inc.; 408/996-1010.
- 818 **POS-IM** Ensign Systems, Inc.; 801-546-1616.
- \* **Prodigy** Prodigy Services Co.; 914/993-8727.
- 819 **ProViz Video Color Converter, ProViz Video Scanner bw, ProViz Video Scanner color** Pixelogic, Inc.; 617/938-7711.
- 822 **Publish It** Timeworks; 312/948-9200, 800/535-9497.

Q

- 823 **QMS-PS 820 turbo** QMS, Inc.; 205/633-4300, 800/631-2692.
- 824 **Quick Capture** Data Translation, Inc.; 508/481-3700.
- 825 **Quicken** Intuit, Inc.; 415/322-0573, 800/624-8742.
- 826 **Quicksilver Videodisc Editing System** Sundance Technology Group; 214/550-8338.
- 827 **QuickView Z21, QuickView Z21 IQ** E-Machines, Inc.; 503/646-6699, 800/344-7274.

R

- 829 **Radius Accelerator 16** Radius, Inc.; 408/434-1010, 800/227-2795.
- 830 **Radius Accelerator 25** Radius, Inc.; 408/434-1010, 800/227-2795.
- 831 **Radius Full Page Display** Radius, Inc.; 408/434-1010, 800/227-2795.
- 832 **Radius Two Page Display System** Radius, Inc.; 408/434-1010, 800/227-2795.
- 833 **Radius Two Page Grayscale Display** Radius, Inc.; 408/434-1010, 800/227-2795.
- 834 **RamDisk + 2.08** Roger Bates; 503/645-3930.
- \* **RamStart 1.4** George A. Nelson; 54 Brattle St., Arlington, MA 02174.

Reader Service

- 835 **RasterOps SFX** RasterOps Corp.; 408/562-4200, 800/468-7600.
- 836 **RecordHolderPlus** Software Discoveries, Inc.; 203/872-1024, 800/437-5200.

S

- 837 **ShadowGraph** Personal Computer Peripherals Corp.; 813/884-3092, 800/622-2888.
- 838 **SilverView Grayscale** Sigma Designs; 415/770-0100, 800/933-9945.
- 839 **SilverView Monochrome** Sigma Designs; 415/770-0100, 800/933-9945.
- 840 **Sound Designer** Digi-design, Inc.; 415/327-8811, 800/333-2137.
- 841 **SpinnakerPlus** Spinnaker Software Corp.; 617/494-1200, 800/826-0706.
- 842 **Stepping Out II** Berkeley Systems, Inc.; 415/540-5536.
- 843 **Storyboarder** American Intellware, Inc.; 213/533-4040.
- 844 **StrataVision 3D** Strata, Inc.; 801/628-5218, 800/869-6855.
- 845 **Studio/1** Electronic Arts; 415/571-7171, 800/245-4525.
- 846 **SuperCard** Silicon Beach Software, Inc.; 619/695-6956.

T

- 847 **Traveller 40Mac** Aströ Systems, Inc.; 408/727-5599.
- 848 **TrueForm** Adobe Systems, Inc.; 415/961-4400, 800/833-6687.
- 849 **Two Page Monochrome Monitor** Ehman, Inc.; 307/789-3830, 800/257-1666.
- 850 **Two-Page Monochrome** Apple Computer, Inc.; 408/996-1010.

U

- 851 **UltraPaint** Deneba Software; 305/594-6965, 800/622-6827.

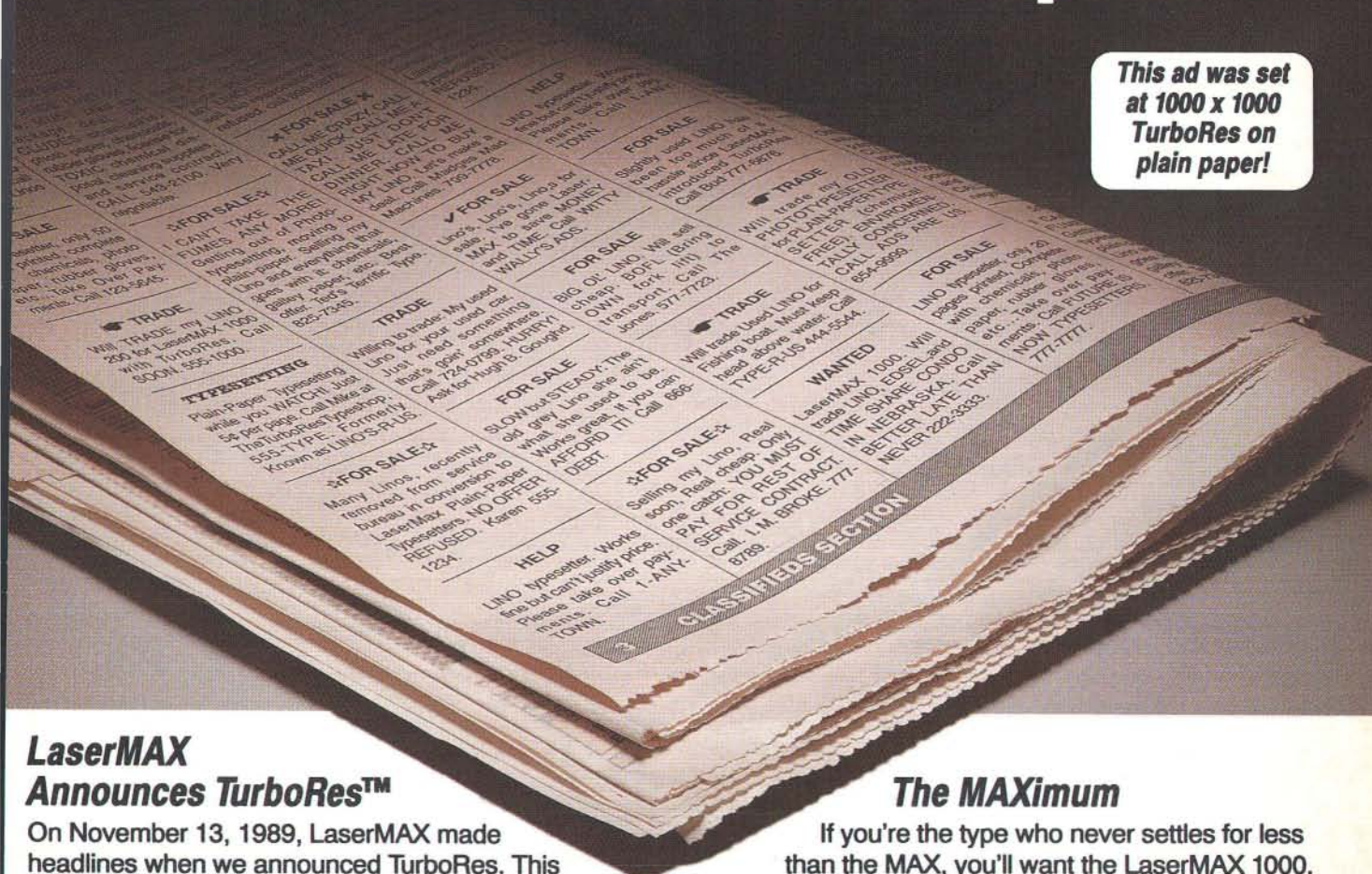
V

- 852 **Video Builder, Video Builder (continues)**



# When **LaserMAX** Made Headlines Lino Also Made the Paper.

This ad was set  
at 1000 x 1000  
TurboRes on  
plain paper!



## LaserMAX Announces TurboRes™

On November 13, 1989, LaserMAX made headlines when we announced TurboRes. This patent-pending printer enhancement allows LaserMAX to *dramatically* increase laser printer resolution. Our proprietary new technology lets us control the size of the pixels on the printed page, eliminating the coarse steps between pixels (which ordinarily show up as jagged edges on type printed at low, 300-dpi resolution). Instead, TurboRes creates plain-paper typesetting that rivals phototypesetting—so you won't need to go to Lino any more.

TurboRes enhances the capabilities of all LaserMAX products, which come complete with 35 standard typefaces, and work with the Macintosh II, IIfx, IICx, IICI, and beyond.

## Goodbye NTX, Hello NTQ

If you already own an Apple LaserWriter, you're in luck. With a LaserMAX MX6 controller you can boost your resolution from 300 dpi all the way up to 800 x 800 TurboRes for Near Typeset Quality.



## The MAXimum

If you're the type who never settles for less than the MAX, you'll want the LaserMAX 1000. With 1000 x 1000 TurboRes, you'll need a printer's loupe to prove that the output isn't traditional typesetting. But unlike phototypesetting, the LaserMAX 1000 is:

- Low-cost (only pennies per page),
- Low-maintenance (no toxic chemicals),
- Very affordable (\$7995).

## Free Sample Output

To learn more about the magic of LaserMAX with TurboRes, call us now at (612) 944-9696. We'll send you a page of actual output so you can see just how good TurboRes really is. Then you can decide for yourself which you'd rather have: the technology that lets you make tomorrow's headlines, or yesterday's classifieds.



7150 Shady Oak Road  
Eden Prairie, MN 55344  
FAX: (612)-944-9151

TurboRes™ is a trademark and patent-pending technology of LaserMaster Corporation. TurboRes enables 1000 x 1000 Plain-Paper Typesetting—Fast. Macintosh and LaserWriter are registered trademarks of Apple Computer Inc.



# PINPOINT YOUR PROSPECTS.

*Advertisers  
interested in  
renting  
MACWORLD's  
Subscriber List,  
Please call  
Kevin Normandeau  
IDG List Services  
1.800.343.6474  
for MA 508.879.0700*

## WHERE TO BUY

### Reader Service

- Color Telerobotics**  
International, Inc.;  
615/690-5600.
- 854 **VideoWorks II, VideoWorks II  
HyperCard Driver** Macro-  
Mind, Inc.; 415/442-  
0200.
- 856 **VIDI/O Box (NTSC Version)**  
Truevision, Inc.;  
317/841-0332,  
800/858-8783.
- 857 **VIDI/O Box (PAL Version)**  
Truevision, Inc.;  
317/841-0332,  
800/858-8783.
- 858 **Virtual 2.0** Connectix  
Corp.; 415/324-0727.
- 859 **Voice Navigator** Articulate  
Systems; 617/876-5236,  
800/443-7077.
- 860 **Voice Navigator XA**  
Articulate Systems;  
617/876-5236,  
800/443-7077.
- 861 **The Voyager CD AudioStack**  
The Voyager Company;  
213/451-1383.
- 862 **The Voyager Video**

### Reader Service

- Stack 2.1** The Voyager  
Company;  
213/451-1383.
- W**
- 863 **Wacom SD-420L** Wacom,  
Inc.; 201/265-4226,  
800/922-6635.
- 864 **The Worx** Julian Systems,  
Inc.; 415/686-4400.
- 865 **WriteNow 2.0** T/Maker  
Co.; 415/962-0195 **M**

Public domain software, freeware,  
and shareware are available  
through online information  
services; user groups (call 800/  
538-9696 ext. 500 for information  
on a local user group); or mail-  
order clearinghouses such as  
Budgetbytes (800/356-3551 for  
orders, 913/271-6022 in Kansas),  
Educomp (800/843-9497, 619/  
259-0255 in California), or the  
Public Domain Exchange (800/  
331-8125, 408/496-0624 in  
California).

## Don't Forget!



Send for the latest  
edition of the free Con-  
sumer Information Cata-  
log. ☐ The Catalog lists  
over 200 selected federal  
publications of consumer  
interest on subjects like  
health, nutrition, federal  
benefits, money manage-  
ment. ☐ The Catalog is  
free and so are many of  
the booklets. ☐ Just send  
your name and address,  
no strings attached.  
Write today:



**Consumer Information Center  
Department DF  
Pueblo, Colorado 81009**

A public service of this publication and the Consumer Information  
Center of the U.S. General Services Administration.



# Sure beats sneakers.



One of the oldest file transfer methods known to Mac is about to become obsolete. You can now forget about using your "sneaker network" to run disks and files between computers around the office.

Introducing LapLink Mac III, the fastest, easiest way to transfer files between Macs or between a Mac and a PC.

LapLink Mac III is very versatile and lets you move files at speeds of nearly 3 megabytes per minute.

That's fast. And it's also easy, thanks to a simple interface familiar to anyone who uses a Mac. Just select the files you want to transfer and click on the copy button.

The new LapLink Mac III comes in two versions. The **Connectivity Pac** gives you everything you need to transfer files between two Macs or a Mac and a PC. You get a universal cable that connects a Mac to a PC or to another Mac. An accelerator that boosts Mac-to-Mac file transfer speeds to up to 750,000 baud. File translators

that make it simple to convert word processing documents from Mac formats to PC formats—or vice versa. And the ability to transfer files between two users over your existing AppleTalk cables or remotely over a modem. All for just **\$189.95\***.

The LapLink Mac III **Network Pac** lets you transfer files between five Macs on an AppleTalk network—without a dedicated file server or expensive hardware. Adding more users is as simple as buying more Network Pacs. And the Network Pac's suggested retail price of **\$299.95\*** works out to just **\$60 per user**. Not bad for a package that includes three-level password protection and remote modem access.

For more information, including a LapLink Mac III brochure, call us at **(800) 662-2652**, extension **202**.

After all, why run your files around when you can use your computer?

## MACWORLD EXPOSITION

See us at Brooks Hall-booth #5005

\*Manufacturer's suggested retail price  
© Copyright 1988, Traveling Software, Inc. LapLink, LapLink Mac, and Traveling Software are registered trademarks and LapLink Mac Accelerator, Connectivity Pac, and Network Pac are trademarks of Traveling Software, Inc. Apple, Macintosh, AppleTalk, and Mac are registered trademarks of Apple Computer, Inc.

## LAPLINK Mac



### Traveling Software

18702 North Creek Parkway, Bothell, WA 98011 • (206) 483-8088

Circle 304 on reader service card



# MEET YOUR NEW MIS DEPARTMENT



Tomorrow's leaders are being shaped by two of the most powerful forces in America today. Computers and You.

In an unprecedented way, the computer industry is bringing technology and learning to neighborhoods more commonly associated with hardship than hardware. In San Francisco's Tenderloin, kids have given up graffiti to study PC architecture, graphics and desktop publishing. They work in a learning center equipped with Apple® computers and IBM® PC-compatible systems, as well as an impressive and growing software library, all provided through donations. And they're learning from volunteer instructors like David Bunnell and Adam Osborne.

The goal of Computers and You is to make a difference through technology. And it's working. By the end of the first quarter, students had already found jobs. For some, their first ever. And it doesn't stop with the Tenderloin. Our vision is to fully develop the San Francisco center and then recreate it in cities across the U.S.

A donation of equipment, time and especially money from you or your company can help make this vision a reality. To find out how, call us at (415) 922-7593. Computers and You, 330 Ellis St., 6th Fl., San Francisco, CA 94102.



A Nonprofit  
Community  
Learning Center  
at Glide  
Memorial  
Church

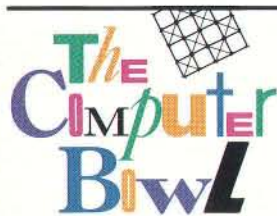
Apple and IBM are registered trademarks of their respective owners.

INDUSTRY FEEDING THE FUTURE ONE BYTE AT A TIME



# ON APRIL 27, SOME OF THE BRIGHTEST MINDS IN THE COMPUTER INDUSTRY ARE GOING TO GET FIRED.

Fired with questions at The Computer Museum's Second Annual Computer Bowl. The computer industry's best and brightest from East and West will take their battle positions in a mind-bending quiz game. It's designed to educate, stimulate, and just plain fire up the feisty competitive spirit of the industry's hottest in the ultimate computer challenge. □ Ready. Aim. Let the game begin. □ Live at the World Trade Center, Boston, Massachusetts. Satellite broadcast to TECHMART, Santa Clara, California.

**Presented by:**

The Association  
for Computing Machinery

**East Coast Team:**

Patrick J. McGovern, Captain  
International Data Group  
William E. Foster  
Stratus Computer, Inc.

Bob Frankston  
Lotus Development  
Corporation  
Edward Fredkin  
Boston University  
Russell E. Planitzer  
Prime Computer, Inc.

**West Coast Team:**

L. John Doerr  
Kleiner Perkins Caufield &  
Byers

Stewart Alsop II  
P. C. Letter  
Bill Gates  
Microsoft Corporation

Charles House  
Hewlett-Packard Company  
Lawrence G. Tesler  
Apple Computer, Inc.

**"The Examiner"**

Mitchell Kapor  
ON Technology, Inc.

**Judges:**

William Joy  
Sun Microsystems, Inc.  
John William Poduska, Sr.  
Stardent Computer Inc.

**Founders:**

Pat Collins Nelson and  
Dr. David Nelson

**Underwriters:**

Pat Collins Nelson

**Official Sponsors:**

Advanced Micro Devices  
The Connectivity Chip  
Company

BASF Corporation  
The Diskette

Fenwick Partners, Inc.  
The Search Firm

Lotus Development  
Corporation  
The PC Software Firm

Merrill Pickard Anderson &  
Eyre

The Venture Capital Firm

Price Waterhouse  
The Accounting Firm  
Stratus Computer, Inc.  
The Transaction Processor  
Sun Microsystems, Inc.  
The Workgroup  
Computing Company  
Thinix Software  
The Intelligent Graphics  
Software  
Visix Software Inc.  
The High Performance  
Workstation Software

The Computer Bowl is a project to benefit the educational programs of The Computer Museum, 300 Congress Street, Boston, MA 02110

For tickets and sponsorship information (617) 426-2800 (415) 327-4749.

**Creative:** Commonwealth Creative Group/Carol Patch • **Typography:** Composing Room of New England • **Separations:** H. K. Graphics



# PRODUCT INDEX

READER SERVICE  
NUMBER

## Software

### BUSINESS

- 474 Absolute Solutions, 247
- Adobe, 180
- Aldus, 87-89
- Checkmark Software, 200
- 152 Fox Software, 215
- 157 Generic Software, 239
- 508 Innovative Data Design, 205
- Intuit, 33
- 7 Mainstay, 176
- Microsoft, IFC-1, 100-101, 189
- 87 Monogram Software, Inc., 106
- 352 Odesta, 32
- 570 ON Technology, 169
- 229 Paracom, 44
- 42 Personal Training Systems, 25
- SAS Institute, 29
- 397 Shana Corporation, 102
- 302 Symmetry, 191
- 332 T/Maker, 5
- 153 TBSP, 12

### VERTICAL

- 474 Absolute Solutions, 247
- Checkmark Software, 200
- 42 Personal Training Systems, 25
- 153 TBSP, 12

### DATA MANAGEMENT

- 47 Blyth Software, 4
- 352 Odesta, 32
- 497 Shana Corporation, 102

### WORD PROCESSING

- 496 Claris, 16
- 396 Sensible Software, 24
- 332 T/Maker, 5

### CAD/CAM

- 157 Generic Software, 239
- 177 Graphsoft, Inc., 241
- 508 Innovative Data Design, 205
- 34 MathSoft, Inc., 187

### COMMUNICATION

- CE Software, 22
- CheckFree Technologies, 39
- 381 DataViz, 70
- 287 Pinnacle Micro, 96
- 184 Prometheus, 251
- 286 Synergy, 221
- 304 Traveling Software, 265

### EDUCATIONAL

- 42 Personal Training Systems, 25

### FORMATS

- Adobe, 180, 258
- 511 Bitstream, 74
- 331 Broderbund, 182
- 340 Broderbund, 182
- Image Club, 34, 50
- 300 Postcraft International, 45
- 211 TypeXpress, 68

### GRAPHICS/DESKTOP PUBLISHING

- Adobe, 180, 258
- 460 Agfa-Compugraphic, 184-185
- Aldus, 87-89
- 35 Altsys, 76
- 472 Ashlar, 202
- 511 Bitstream, 74
- 331 Broderbund, 182
- 340 Broderbund, 182
- 15 Cricket, 36-37
- 446 Deneba Software, 234
- 512 Emerald City Software, 249

READER SERVICE  
NUMBER

- 513 Emerald City Software, 249
- 18 Emerald City Software, 218
- 212 Emerald City Software, 218
- 157 Generic Software, 239
- 177 Graphsoft, Inc., 241
- Image Club, 34, 50
- 508 Innovative Data Design, 205
- 342 Lasermix, 263
- 229 Paracom, 44
- 200 Postcraft International, 45
- Raster Ops, 260-261
- 297 Shana Corporation, 102
- 266 Silicon Beach Software, 41
- 504 Strata, 175
- 190 Supremacy Technology, 47
- 476 Teletypesetting, 246

### PERSONAL BUSINESS/HOME

- 474 Absolute Solutions, 247
- CheckFree Technologies, 39
- Intuit, 33

### ENTERTAINMENT

- 134 Casady & Greene, 54
- 200 Postcraft International, 45

### NETWORKING

- 69 Insignia Solutions, 38
- 304 Traveling Software, 265

### UTILITIES

- CE Software, 178
- Central Point Software, 221
- 357 Central Point Software, 245
- 364 Fifth Generation Systems, 98
- 250 Fifth Generation Systems, 104
- 439 GDT Softworks, 46
- 237 Symantec, 83, 85

### MISCELLANEOUS

- Aldus, 87-89
- 16 Casady & Greene, 8
- Checkmark Software, 200
- 439 GDT Softworks, 46
- 153 TBSP, 12

## Hardware

### COMPUTER SYSTEMS

- 509 Hardware Express, 270
- 58 MacFriends, 28
- 109 MacFriends, 52
- 361 MacFriends, 193
- 86 MacFriends, 250

### PRINTERS

- 460 Agfa-Compugraphic, 184-185
- 271 Diconix, 56-57
- 204 GCC Technologies, 53
- 343 Hewlett Packard, 210-211
- 344 Hewlett Packard, 212-213
- 145 La Cie, 26-27
- 342 Lasermix, 263
- 424 Mirror Technologies, 72-73
- 409 Newgen, 84
- 143 Tektronix, 194
- 118 Zericon, 251
- 267 Zericon, 251

### BOARDS

- 403 American Micro Distributors, 46
- 404 Daystar Digital, 94
- 477 Daystar Digital, 94
- 342 Lasermix, 263
- 427 Microtek, 214
- 196 National Semiconductor, 237
- 108 Orange Micro, 19
- Raster Ops, 260-261

READER SERVICE  
NUMBER

### DIGITIZERS/SCANNERS

- 289 Abaton, 252
- 294 Abaton, 252
- 460 Agfa-Compugraphic, 184-185
- 230 Caere Corporation, 42-43
- 122 Calcomp, 78-79
- 343 Hewlett Packard, 210-211
- 344 Hewlett Packard, 212-213
- 427 Microtek, 214
- 507 Wacom Co., Ltd., 48-49

### DISPLAY

- 101 E-Machines, 161
- 154 Ehman, Inc., C3-C4
- 500 Ehman, Inc., C5
- 63 In-Focus, 257
- 58 MacFriends, 28
- 109 MacFriends, 52
- 361 MacFriends, 193
- 86 MacFriends, 250
- Magnavox, 173
- 424 Mirror Technologies, 72-73
- 46 Radius, 9-11

### MODEMS

- 61 Computer Friends, 270
- 145 La Cie, 26-27
- 184 Prometheus, 251
- Shiva, 13

### HARD DISKS/STORAGE

- 403 American Micro Distributors, 46
- 41 Braemar Corp., 40
- 217 Braemar Corp., 40
- 85 Ehman, Inc., C3-C4
- 500 Ehman, Inc., C5
- 308 GCC Technologies, 55
- 192 IDS Systems, 171
- 260 Iomega, 20-21
- 145 La Cie, 26-27
- 224 Liberty Systems, 269
- 465 MacProducts, 279
- 207 Mass Micro Systems, 35
- 263 Maynard Electronics Corp., 82
- 275 MicroNet Technology, 242
- 398 MicroNet Technology, 255
- 458 Microtech International, 80
- 424 Mirror Technologies, 72-73
- 287 Pinnacle Micro, 96
- 149 Rodime, 208
- Scagate, 92
- 321 Tecmar, 196
- Universal MacProducts, 206

### VIDEO

- 465 MacProducts, 279
- 108 Orange Micro, 19
- Raster Ops, 260-261
- 190 Supremacy Technology, 47

### SECURITY DEVICES

- 463 Software Security, Inc., 75

### MISCELLANEOUS

- 403 American Micro Distributors, 46
- 171 Computer Accessories, 77
- 61 Computer Friends, 270
- 63 In-Focus, 257
- 503 Kennect, 237
- 426 Microtouch, 216-217
- 449 Microtouch, 216-217
- Next Computer, 6-7
- 304 Traveling Software, 265
- 514 XcTel, 91

## Accessories

### FLOPPY DISKS/HOLDERS

- 402 3M, 14-15

READER SERVICE  
NUMBER

### SERVICES

- CheckFree Technologies, 39
- 406 MacAcademy, 69
- 293 Safeware, 246

### MISCELLANEOUS

- 319 Compuserve, 207
- 61 Computer Friends, 270
- Kensington Microware, 198
- 30 Kensington Microware, BC
- 239 Secure-It, 40

## Mail Order

- 5 Beverly Hills Computer, 278
- 32 CDA Computer Sales, 86
- 79 Diskette Connection, 271
- 368 Dr. Mac, 274-275
- Hard Drives, 277
- 509 Hardware Express, 270
- 224 Liberty Systems, 269
- MacConnection, 58-67
- 498 MacExpress, 276
- 58 MacFriends, 28
- 109 MacFriends, 52
- 361 MacFriends, 193
- 86 MacFriends, 250
- 264 MacLand, 272-273
- 465 MacProducts, 279
- 78 MacWarehouse, 222-232
- 440 MacWarehouse, 280-281
- 70 MacZone, The, 108-115
- 44 Programs Plus, 162-165
- 442 Texas Mac Express, 271



# ADVERTISER INDEX

READER SERVICE NUMBER		READER SERVICE NUMBER		READER SERVICE NUMBER		READER SERVICE NUMBER	
289	Abaton, 252	271	Diconix, 56-57	224	Liberty Systems, 269	287	Pinnacle Micro, 96
294	Abaton, 252	79	Diskette Connection, 271	406	MacAcademy, 69	200	Postcraft International, 45
474	Absolute Solutions, 247	368	Dr. Mac, 274-275	—	MacConnection, 58-67	44	Programs Plus, 162-165
—	Adobe, 180, 258	101	E-Machines, 161	498	MacExpress, 276	184	Prometheus, 251
460	Agfa-Compugraphic, 184-185	154	Ehman, Inc., C3-C4	58	MacFriends, 28	46	Radius, 9-11
—	Aldus, 87-89	500	Ehman, Inc., C5	109	MacFriends, 52	—	Raster Ops, 260-261
35	Alsys, 76	512	Emerald City Software, 249	361	MacFriends, 193	149	Rodime, 208
403	American Micro Distributors, 46	513	Emerald City Software, 249	86	MacFriends, 250	293	Safeware, 246
472	Ashlar, 202	18	Emerald City Software, 218	264	MacLand, 272-273	—	SAS Institute, 29
5	Beverly Hills Computer, 278	212	Emerald City Software, 218	465	MacProducts, 279	—	Seagate, 92
511	Bitstream, 74	364	Fifth Generation Systems, 98	78	MacWarehouse, 222-232	239	Secure-It, 40
47	Blyth Software, 4	250	Fifth Generation Systems, 104	440	MacWarehouse, 280-281	396	Sensible Software, 24
41	Braemar Corp, 40	152	Fox Software, 215	—	Macworld Expo, 237	297	Shana Corporation, 102
217	Braemar Corp, 40	204	GCC Technologies, 53	70	MacZone, The, 108-115	—	Shiva, 13
231	Broderbund, 182	308	GCC Technologies, 55	—	Magnavox, 173	266	Silicon Beach Software, 41
240	Broderbund, 182	439	GDT Softworks, 46	7	Mainstay, 176	463	Software Security, Inc., 75
230	Caere Corporation, 42-43	157	Generic Software, 239	207	Mass Micro Systems, 35	504	Strata, 175
122	Calcomp, 78-79	177	Graphsoft, Inc., 241	34	MathSoft, Inc., 187	190	Supermac Technology, 47
16	Casady & Greene, 8	—	Hard Drives, 277	263	Maynard Electronics Corp., 82	—	Symantec, 83
134	Casady & Greene, 54	509	Hardware Express, 270	275	MicroNet Technology, 242	237	Symantec, 85
32	CDA Computer Sales, 86	343	Hewlett Packard, 210-211	398	MicroNet Technology, 255	302	Symmetry, 191
—	CE Software, 22, 178	344	Hewlett Packard, 212-213	—	Microsoft, IFC-1, 100-101, 189	286	Synergy, 221
—	Central Point Software, 221	192	IDS Systems, 171	458	Microtech International, 80	332	T/Maker, 5
357	Central Point Software, 245	—	Image Club, 34, 50	427	Microtek, 214	153	TBSP, 12
—	CheckFree Technologies, 39	63	In-Focus, 257	426	Microtouch, 216-217	321	Tecmar, 196
—	Checkmark Software, 200	508	Innovative Data Design, 205	449	Microtouch, 216-217	143	Tektronix, 194
496	Clarix, 16	69	Insignia Solutions, 38	424	Mirror Technologies, 72-73	476	Teletypesetting, 246
85	CMS Enhancements, 30	—	Intuit, 33	87	Monogram Software, Inc., 106	442	Texas Mac Express, 271
319	Computerve, 207	—	Invitational Computer	196	National Semiconductor, 237	402	3M, 14-15
171	Computer Accessories, 77	—	Conferences, 248	409	Newgen, 84	304	Traveling Software, 265
61	Computer Friends, 270	260	Iomega, 20-21	—	Next Computer, 6-7	211	TypeXpress, 68
15	Cricket, 36-37	503	Kennect, 237	352	Odesta, 32	—	Universal MacProducts, 206
281	DataViz, 70	—	Kensington Microware, 198	370	ON Technology, 169	507	Wacom Co., Ltd., 48-49
404	Daystar Digital, 94	30	Kensington Microware, BC	108	Orange Micro, 19	514	XeTel, 91
477	Daystar Digital, 94	145	La Cie, 26-27	229	Paracomp, 44	118	Zericon, 251
346	Deneba Software, 234	342	Lasermax, 263	42	Personal Training Systems, 25	267	Zericon, 251

## Having Problems With Your Subscription?

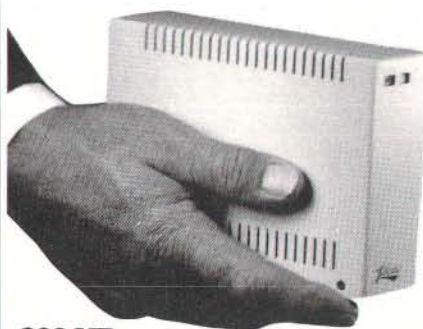
*Please let us know.*

Phone toll-free  
800/525-0643.  
From Colorado,  
Alaska, Hawaii  
and outside the  
U.S., please phone  
303/447-9330.

## Portable Hard Drives

- Compact, measures only 2" x 5" x 7"
- Lightweight, under 3lbs.
- Durable 60 G shock rating

- 110-220 volt power supply option inside drive case
- Quiet connection cooled
- Fast, 12ms access,



200 MB

40 Quantum*	599 <sup>00</sup>
80 Quantum*	849 <sup>00</sup>
100 Conner*	899 <sup>00</sup>
105 Quantum*	999 <sup>00</sup>
200 Maxtor*	1599 <sup>00</sup>
International Power Carrying Case	50 <sup>00</sup>
	29 <sup>00</sup>

\*Add 100<sup>00</sup> for Internal Power Supply

*Liberty*  
Systems

**The Affordable Portable**  
120 Saratoga Ave., Ste. 82, Santa Clara, CA 95051

**Call us today for  
your free 30-day trial.**

**(408) 983-1127**



Never buy  
another  
ribbon with

# MacInker

Each MacInker shipped complete with free ink bottle,  
reservoir cover and ink dispenser



Over 125,000 sold  
Free catalog

**\$42.00**  
shipping \$4.50

MacInker™, the original, automatic ribbon re-ink system. Model 2341M re-inks Imagewriter I/II black & single color cartridges. The Universal MacInker re-inks hundreds of cartridge types (including the Imagewriter LQ, one color and multi-color) with suitable adapters. Extra dark, dot matrix, lubricant ink yields better than new print quality and extends printhead life. New reservoir for precise ink metering. Average number of re-inkings/cartridge is 60-100. With the optional **Multicolor Adapter (mod M422, \$40.00)** your MacInker re-inks 4-color Imagewriter II cartridges. Full range of accessories available, inks & cartridges, heat transfer, etc. Colors: red, green, blue, yellow, purple, brown, orange, silver, gold, white.

Imagewriter I/II MacInker (mod 2341M).....42.00  
Universal MacInker (includes one adapter).....68.50  
Multicolor Adapter (mod M422).....40.00  
Heat Transfer Adapter.....25.00 HT cartridge.....9.00  
Imagewr. cartr. black.....3.15/ea 4-color.....10.00/ea  
Imagewr. LQ cartr. black.....14.00 4-color.....20.00  
Extra ink bottle black.....3.00/ea pint black.....18.50

## Data Switches, manual or automatic



4 port 8 pin manual	50.00
4 port automatic	149.00
4 port 9 pin manual	50.00
cables	16.00

Special Offer. Order for >\$60.00 and say: "I saw it in MacWorld" and get a free mousepad. Order for >\$100.00 and get a free key chain, beeper and flashlight combined (a \$15.00 value) or get an accurate electronic pedometer, jog and step meter with included calculator for \$12.00 (a \$40.00 value).

# LightFax 9624

9600 b fax, 2400 b modem

**High Speed Fax and 2400 baud modem** in one compact unit. 9600 baud fax (fully Group 3 compatible) for fast transmission and lower telephone bills. **Fax directly from your application. Cable/software included.** Powerful software includes **File Queuing, Scheduled Sending, Broadcasting, NameCard Data Management.** Free "Facts on Faxes" bulletin.

LightFax 9624 (send and receive).....499.00  
LightFax 9624 (send only version).....399.00



One year warranty  
Shipping \$7.00

**\$399.00**

## LightSpeed 9624E -9600 b Modem

V.32 - MNP class 5



**\$799.00**

Shipping \$7.00

- 9600/4800/2400/1200 bps full duplex data transfer
- V.32/V.22bis/V.22, Bell 212A compliant, fully Hayes compatible
- MNP class 5 error correction and data compression
- No proprietary protocols. Effective throughput up to 19.2bps
- Auto speed detection
- Cable and software included

LightSpeed 9624E 9600 baud modem.....799.00  
LightSpeed 2400 baud modem.....128.00

**Order Toll Free 800-547-3303**

In Oregon (503)626-2291

Computer Friends, Inc., 14250 NW Science Park Dr. Portland OR 97229  
fax (503)643-5379 - telex 4949559 CF - AppleLink DO 438

Circle 61 on reader service card.

# RasterOps™ 264 \$649

## Macintosh

SE/30	2949
IIcx	3298
IIci	4498
Portable	4395
(w/40MB drive)	4895

## Memory

1 MB (4 x 256)	200
4 MB	320
8 MB	640

## Monitors

Apple 13" RGB	746
Apple Portrait	829
Radius	CALL
Sony 1302 Multiscan	699
19" Color Trinitron	2599

Our experienced Macintosh sales consultants will help you configure a system to your exact needs.

## Sample System

Macintosh IIci	4498
4 MB memory	320
Apple 13" RGB	746
105 MB Quantum Drive	749
Extended Keyboard	134
Delivered Price	<b>\$6,447</b>
(or lease \$165/mo.)	

## Quantum Internals

40 MB (19 ms)	449
80 MB (19 ms)	679
105 MB (19 ms)	749
120 MB (15 ms)	949
170 MB (15 ms)	1149

## RasterOps

ColorBoard 264	649
ColorBoard 264/SE30	898
ColorBoard 232 SFX	3098
ColorBoard 224 SFX	3798
ColorBoard 108+	849
ColorBoard 108+/SE30	998
FrameGrabber 324NC	1598
ClearVue/GS	1649

No surcharge for credit cards or COD's. Free ground shipping in continental United States. Second day air only \$3.00 for packages under 20 lbs. Texas residents please add 7.75% sales tax. Leasing available to qualified businesses. Sample system lease price based on 60 month true lease. Sorry, we cannot accept purchase orders.

512/448-1911 FAX 512/448-0825

# 1-800/622-4739

Prices subject to change (usually down). Although we are not an authorized Apple dealer, we will repair or replace any Apple equipment during the warranty. All merchandise is guaranteed new, unused, and covered by original manufacturer's warranty. 'Apple', 'Macintosh', 'Quantum', 'RasterOps', 'Radius', and 'Sony' are trademarks of their respective companies.

# HARDWARE EXPRESS

6800 Westgate Blvd., Suite 139 Dept. 325, Austin, TX 78745





# LEARN HOW TO JUMP- START A LIFE.

Learn  
Red Cross  
CPR.



## TEXAS EXPRESS

### MAC SYSTEMS

#### MAC SE

Mac SE, 40 mb Internal,  
2 mb RAM, FDHD Drive,  
Extended Keyboard

**\$2,399**

#### MAC IIcx

Mac IIcx, 40 mb Internal,  
5 mb RAM, 8 bit color,  
14" Color Monitor,  
Extended Keyboard

**\$4,999.**

#### SE/30

SE/30, 105mb Quantum,  
Extended Keyboard,  
5mb RAM

**\$4,099.**

### MAC PORTABLE

**\$4,349.**

with Apple 40mb Internal

**\$4,849.**

### ACCELERATORS

#### NOVY MAC-030

System 7.0 Compatible

For Macintosh 512KE, Plus & SE

Motorola 68030 16mhz Processor, PMMU

NovyMac 030 16mhz **\$699**

NovyMac 030 25mhz **\$999**

68882 16mhz CoProcessor **\$199**

Supplemental Power Supply **\$125**

**One Meg SIMMs \$69**

**Ricoh 6000/PS \$2,395**

*Toll Free Technical Support*

No Surcharge



**1-800-MAC-STUF**

9000 Lodge Court • Austin, Texas 78758  
(800) 622-7883 • FAX (512) 339-6950

Circle 442 on reader service card.

**maxell**

5 1/4" DS  
**5<sup>95</sup>**  
PER BOX

5 1/4" HD  
**10<sup>95</sup>**  
PER BOX

3.5" DS  
**8<sup>95</sup>**  
PER BOX

3.5" HD  
**17<sup>95</sup>**  
PER BOX

**SONY**

3 1/2" DS  
**8<sup>95</sup>**  
PER BOX

3 1/2" HD  
**17<sup>95</sup>**  
PER BOX

*Bulk  
Diskettes*

PER EA  
Min. 50

3.5" DS - **.49**

3.5" HD - **1.49**



Authorized Distributor Magnetic Media Division

5 1/4" DD  
**5<sup>95</sup>**  
PER BOX

5 1/4" HD  
**10<sup>95</sup>**  
PER BOX

3 1/2" DS  
**8<sup>95</sup>**  
PER BOX

3 1/2" HD  
**17<sup>95</sup>**  
PER BOX

"Old Reliable"

**Diskette  
Connection**

**NORTHWEST 1-800-451-1849**

PO BOX 10247, WILMINGTON, DE. 19580

**SOUTHEAST 1-800-940-4600**

PO BOX 4183, DEERFIELD BEACH, FL. 33442

**MIDWEST 1-800-654-4058**

PO BOX 1674, BETHANY, OK. 73008

**WEST 1-800-621-6221**

PO BOX 12396, LAS VEGAS, NV. 89112

Minimum Order \$20.00 NO SURCHARGE on VISA / MC

COD orders add \$3.00 UPS Surface shipping add \$4.00

per each 100 Disks (First Class US Mail delivery extra)

(Prices are subject to change without notice)



FAX

(405) 495-4598

Circle 79 on reader service card.



# Sale!

# MacLand<sup>TM</sup>

## America's Largest Macintosh Hardware Source

Prices good through April 1990

### Externals

	Retail Price	Sale Price
<b>20 Megabyte</b>		
CMS Enhancements 20 32ms	\$725:	<b>\$429.</b>
Seagate 20 32ms	\$725:	<b>\$359.</b>
<b>30 Megabyte</b>		
Caché Systems 30 28ms	\$799:	<b>\$489.</b>
CMS Enhancements 30 32ms	\$799:	<b>\$489.</b>
POWERDrive 30 40ms	\$699:	<b>\$399.</b>
Seagate 31 32ms	\$749:	<b>\$399.</b>
<b>40 Megabyte</b>		
Caché Systems 45 28ms	\$899:	<b>\$549.</b>
CMS Enhancements 45 32ms	\$935:	<b>\$589.</b>



Quantum Hard Disk Drives

Industry leading Quantum quality, dependability and fast access speeds at affordable prices. Backed by our **Two Year Warranty**, all Quantum drives come complete with cables and software.

POWERDrive 45 40ms	\$799:	<b>\$449.</b>
Quantum 40 19ms (2 Year Warranty!)	\$999:	<b>\$519.</b>
Seagate 46 32ms	\$899:	<b>\$449.</b>
<b>60 Megabyte</b>		
Caché Systems 60 28ms	\$999:	<b>\$579.</b>
CMS Enhancements 60 40ms	\$1,025:	<b>\$635.</b>
POWERDrive 80 28ms	\$699:	<b>\$539.</b>
Seagate 62 28ms	\$999:	<b>\$549.</b>
<b>80 Megabyte</b>		
Caché Systems 80 28ms	\$1,199:	<b>\$679.</b>
CMS Enhancement 81 28ms	\$1,299:	<b>\$779.</b>
POWERDrive 80 28ms	\$1,099:	<b>\$588.</b>
Quantum 80 19ms (2 Year Warranty!)	\$1,399:	<b>\$769.</b>
Seagate 81 28ms	\$1,199:	<b>\$589.</b>
<b>100-200 Megabyte</b>		
Caché Systems 150 16ms	\$2,499:	<b>\$1,299.</b>
Caché Systems 150/150		
Tape 16ms	\$3,299:	<b>\$2,159.</b>
Imprimis-MacWren 170 16ms	\$2,599:	<b>\$1,499.</b>
Quantum 105 19ms (2 Year Warranty!)	\$1,999:	<b>\$819.</b>
Quantum 120 15ms (2 Year Warranty!)	\$2,499:	<b>\$1,099.</b>
Quantum 170 15ms (2 Year Warranty!)	\$2,999:	<b>\$1,249.</b>

### 300-600 Megabyte

CMS Enhancements PD 300 16ms	\$4,295:	<b>\$2,395.</b>
CMS Enhancements PD 600 16ms	\$5,845:	<b>\$3,485.</b>
Imprimis - MacWren 300 16ms	\$4,295:	<b>\$1,999.</b>
Imprimis - MacWren Runner 320 10.7ms	\$4,895:	<b>\$2,399.</b>
Imprimis - MacWren 600 16ms	\$5,699:	<b>\$2,799.</b>

### SE, SE30 & Ilcx, Ilci Internals

<b>20 Megabyte</b>		
Seagate 20 32ms	\$599:	<b>\$299.</b>
<b>30 Megabyte</b>		
Caché Systems 30 28ms	\$649:	<b>\$375.</b>
CMS Enhancements Pro 30 38ms	\$649:	<b>\$399.</b>
Seagate 31 32ms	\$649:	<b>\$349.</b>
<b>40 Megabyte</b>		
Caché Systems 45 28ms	\$815:	<b>\$449.</b>
CMS Enhancements Pro 45 32ms	\$825:	<b>\$469.</b>
Quantum 40 19ms (2 Year Warranty!)	\$899:	<b>\$399.</b>
Seagate 46 32ms	\$799:	<b>\$399.</b>
<b>60 Megabyte</b>		
Seagate 62 28ms	\$999:	<b>\$499.</b>



Imprimis MacWren

Renowned Imprimis quality for large storage needs. These drives feature access times as fast as 10.7ms in sizes ranging from 300 - 600 Megabytes. All drives come complete with appropriate brackets, cabling and as well as system and formatting software. One year warranty.

<b>80 Megabyte</b>		
Quantum 80 19ms (2 Year Warranty!)	\$1,299:	<b>\$649.</b>
<b>100-170 Megabyte</b>		
Quantum 105 19ms (2 Year Warranty!)	\$1,899:	<b>\$699.</b>
Quantum 120 15ms (2 Year Warranty!)	\$2,399:	<b>\$999.</b>
Quantum 170 15ms (2 Year Warranty!)	\$2,899:	<b>\$1,149.</b>

### 30 DAY MONEY BACK GUARANTEE

ON ALL IMPRIMIS, QUANTUM, AND SEAGATE HARD DISK DRIVES

No questions asked. If you are unsatisfied with any of these drives for any reason you may return them within 30 days of your invoice for a full refund less shipping and handling.

Visa, MasterCard, and American Express accepted NO surcharge. Your Credit Card will not be charged until your order is shipped. We accept COD orders, additional \$5.00 charge. AZ residents add 6.5%. All shipments made by Federal Express

Standard Air which is 1 to 2 day service. COD's Shipped by UPS 2 day air. Call for shipping costs. Products purchased in error are subject to a 20% restocking fee. All prices subject to change without notice. All products subject to availability.



CMS Hard Disk Drives

Hard disk drives, tape back ups, removable hard drives, high capacity drives, CMS has them all and we carry their full line.

### Mac II & IIX Internals

<b>20 Megabyte</b>		
Seagate 20 32ms	\$599:	<b>\$299.</b>
<b>30 Megabyte</b>		
Seagate 31 32ms	\$649:	<b>\$349.</b>
<b>40 Megabyte</b>		
Caché Systems 45 28ms	\$599:	<b>\$449.</b>
CMS Enhancements Pro 45 32ms	\$569:	<b>\$469.</b>
Quantum 40 19ms (2 Year Warranty!)	\$899:	<b>\$399.</b>
Seagate 46 32ms	\$799:	<b>\$399.</b>
<b>60 Megabyte</b>		
Caché Systems 60 28ms	\$639:	<b>\$499.</b>
CMS Enhancements Pro 60 40ms	\$649:	<b>\$579.</b>
Seagate 62 28ms	\$649:	<b>\$475.</b>
<b>80 Megabyte</b>		
Caché Systems 80 28ms	\$729:	<b>\$575.</b>
CMS Enhancements Pro 80 28ms	\$749:	<b>\$669.</b>
Quantum 80 19ms (2 Year Warranty!)	\$1,299:	<b>\$649.</b>
Seagate 81 28ms	\$749:	<b>\$499.</b>
<b>100-170 Megabyte</b>		
Caché Systems 150 16ms	\$1,429:	<b>\$1,199.</b>
CMS Enhancements PI 170 16ms	\$1,699:	<b>\$1,499.</b>
Imprimis-MacWren 170 16ms	\$2,499:	<b>\$1,399.</b>
Quantum 105 19ms (2 Year Warranty!)	\$1,899:	<b>\$699.</b>
Quantum 120 15ms (2 Year Warranty!)	\$2,399:	<b>\$999.</b>
Quantum 170 15ms (2 Year Warranty!)	\$2,899:	<b>\$1,149.</b>
<b>300-600 Megabyte</b>		
CMS Enhancements PI 300 16ms	\$4,395:	<b>\$2,195.</b>
Imprimis - MacWren 300 16ms	\$4,395:	<b>\$1,849.</b>
Imprimis - MacWren Runner 320 10.7ms	\$4,695:	<b>\$2,249.</b>
Imprimis - MacWren 600 16ms	\$5,995:	<b>\$2,699.</b>
CMS Enhancements PI 600 16ms	\$5,995:	<b>\$3,499.</b>



# The Reasons You Should Buy From MacLand...

**1. Price—**  
Because of our multi-million dollar buying power, we purchase large volumes of quality hardware at low prices and pass the savings on to our customers.

**2. Delivery—**  
We offer **Same Day Shipping** on all in stock items if we receive your order by 3 pm Mountain Standard Time. ALL credit card orders are shipped by **FEDERAL EXPRESS STANDARD AIR** service which means you get your merchandise fast!



**Inspected & Tested  
by MacLand Technician**  
No. 6

**3. Technical Support—**  
MacLand has the best technical support, period. We provide you with technical support **BEFORE AND AFTER** your purchase. Best of all, to assure you the highest quality, our trained technicians test **ALL** hard disk drives for quality and viruses before we ship them to you.



**Ricoh Laser 6000/PS**

The 6000/PS provides all of the power and performance that you'll ever need to get the job done. This Adobe Postscript Laser Printer can do letter, legal, envelopes, transparencies, and European paper sizes. Backed with a solid One Year Warranty. An unbelievable price of \$2,495, this month!

<b>Kodak</b>		
Diconix Portable Printer . . . . .	\$899:	<b>\$514.</b>
<b>Ricoh</b>		
Ricoh PostScript Laser Printer . . . . .	\$3,495:	<b>\$2,495.</b>
<b>Qume</b>		
Crystal Print Publisher . . . . .	\$4,495:	<b>\$2,849.</b>

## Erased Optical

Peripheral Land 635 Optical 45ms . . . . .	\$5,699:	<b>\$3,995.</b>
-----------------------------------------------	----------	-----------------

## Memory Upgrades

<b>One Meg SIMMS . . . . .</b>	<b>Call.</b>
Mac Portable Memory Now Available.	

## Scanners

Abaton 300/S W/Interface . . . . .	\$1,899:	<b>\$1,299.</b>
Abaton 300/GS W/Interface . . . . .	\$2,199:	<b>\$1,475.</b>
Hewlett Packard ScanJet W/Interface . . . . .	\$2,199:	<b>\$1,499.</b>
Microtek MS II Sheet Feed . . . . .	\$1,495:	<b>\$1,049.</b>
Microtek MSF 300GS . . . . .	\$2,195:	<b>\$1,479.</b>
Microtek MSF 300Z - Color W/Interface . . . . .	\$2,695:	<b>\$1,975.</b>

## Monitors

Magnavox 14" Color Display . . . . .	\$695:	<b>\$489.</b>
NEC MacSync 14" Color Monitor . . . . .	\$899:	<b>\$519.</b>
<b>Qume</b>		
Qume 14" Color Monitor . . . . .	\$649:	<b>\$499.</b>
Qume Portrait Monitor SE, II, IliX, IliC . . . . .	\$1,149:	<b>\$799.</b>

## radius™

Full Page Display . . . . .	<b>Call.</b>
Two Page Display 19" . . . . .	<b>Call.</b>
Two Page Display 21" . . . . .	<b>Call.</b>
Two Page GrayScale . . . . .	<b>Call.</b>
Two Page Color . . . . .	<b>Call.</b>

<b>RasterOps</b>		
RasterOps ClearVue Mac II . . . . .	\$1,995:	<b>\$1,299.</b>
RasterOps 19" ClearVue SE . . . . .	\$1,995:	<b>\$1,399.</b>
RasterOps 19" ClearVue/ GS Gray Scale . . . . .	\$2,195:	<b>\$1,599.</b>
RasterOps 16" 108 + Color System . . . . .	\$4,190:	<b>\$2,949.</b>
RasterOps 19" 108 + Color System . . . . .	\$5,690:	<b>\$3,699.</b>



**SIMMS**

MacLand has memory in stock! Call us for our current prices. Remember, if you bought your memory from someone else, you probably paid too much!

<b>RasterOps 16" 108 + SE30</b>		
Color System . . . . .	\$4,890:	<b>\$2,999.</b>
<b>RasterOps 19" 108 + SE30</b>		
Color System . . . . .	\$5,790:	<b>\$3,799.</b>
<b>RasterOps 16" 224</b>		
Color System . . . . .	\$6,990:	<b>\$4,849.</b>
<b>RasterOps 19" 224</b>		
Color System . . . . .	\$8,190:	<b>\$5,599.</b>
<b>RasterOps 264 Color Board, II . . . . .</b>	\$995:	<b>\$699.</b>
<b>RasterOps 264 Color Board, SE . . . . .</b>	\$1,295:	<b>\$899.</b>
<b>RasterOps FrameGrabber . . . . .</b>	\$1,995:	<b>\$1,299.</b>

<b>Samsung 15" Full Page Monitor and Card . . . . .</b>	\$999:	<b>\$589.</b>
<b>Sony 1302 Color Monitor . . . . .</b>	\$995:	<b>\$659.</b>
<b>Sony 1304 Color Monitor . . . . .</b>	\$1,099:	<b>\$719.</b>

## Accelerator Boards

## radius™

Radius 16 for MacPlus or Mac SE . . . . .	<b>Call.</b>
Radius 25 for Mac SE . . . . .	<b>Call.</b>
Siclone Si3033 33Mhz for Mac II, IliX, IliC . . . . .	<del>\$3,995:</del> <b>\$2,799.</b>
Siclone Si3033 33Mhz with 68882 for Mac II, IliX, IliC . . . . .	<del>\$4,995:</del> <b>\$3,499.</b>

## Modems/FAX Modems

<b>Abaton Fax Modem 4800 Baud . . . . .</b>	\$395:	<b>\$259.</b>
<b>Abaton Fax Modem 9600 Baud . . . . .</b>	\$595:	<b>\$399.</b>
<b>Hayes 2400 External . . . . .</b>	\$499:	<b>\$379.</b>
<b>Hayes 2400 Internal . . . . .</b>	\$499:	<b>\$379.</b>
<b>Hayes 9600 V.42 External . . . . .</b>	\$999:	<b>\$755.</b>
<b>Hayes Interbridge . . . . .</b>	\$799:	<b>\$635.</b>
<b>Orchid Fax Modem 9600 Baud . . . . .</b>	\$899:	<b>\$439.</b>
<b>Telebit T-1000 9600 Baud . . . . .</b>	\$745:	<b>\$679.</b>
<b>Telebit T-2500 19,200 Baud . . . . .</b>	\$1,495:	<b>\$1,229.</b>

## External Floppy Drives

<b>Kennect Technology</b>		
Rapport . . . . .	\$295:	<b>\$215.</b>
Drive 2.4 . . . . .	\$495:	<b>\$349.</b>

## Removables/Tape Back-Ups

	<b>Reg. Price</b>	<b>Sale Price</b>
<b>44 Megabyte Removables</b>		
CMS Enhancements 44 25ms . . . . .	\$1,495:	<b>\$839.</b>
Peripheral Land 44 25ms . . . . .	\$1,395:	<b>\$999.</b>
<b>POWERDrive 44 25ms . . . . .</b>	\$1,395:	<b>\$749.</b>
SyQuest 44 25ms . . . . .	\$1,599:	<b>\$749.</b>

<b>40-150 Megabyte Tape Back-Ups</b>		
Caché 150 Tape . . . . .	\$1,399:	<b>\$789.</b>
CMS Enhancements 60 . . . . .	\$995:	<b>\$649.</b>
CMS Enhancements 150 . . . . .	\$1,445:	<b>\$849.</b>
Irwin 40 Meg Tape . . . . .	\$1,395:	<b>\$949.</b>
Irwin 80 Meg Tape . . . . .	\$1,695:	<b>\$1,149.</b>

## Printers

<b>Hewlett Packard</b>		
DeskWriter . . . . .	\$1,299:	<b>\$849.</b>



**Seagate Hard Disk Drives**

MacLand now carries Seagate hard disk drives. Seagate is the world's largest manufacturer of small hard disc memory products, and MacLand carries their full line. Don't take chances with your hard disk drive. Make sure to ask for Seagate.

**For Ordering and Technical Support Call 1-800-333-3353 (FAX #602-345-2217)**

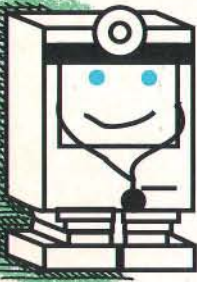


5006 South Ash Avenue, Suite 101 Tempe AZ 85282 (602) 820-5802



Circle 264 on reader service card





# DR MAC TAKES

**THE LOWEST  
PRICES!**

**SAME DAY SHIPPING  
TILL 9:00 PM EST!**

## SOFTWARE

### A LASTING IMPRESSION

RésuméExpress ..... 34

### AATRIX

Checkwriter II ..... 35  
Payroll Plus ..... 165  
TimeCard ..... 115  
TimeMinder ..... 169

### ACIUS

4th Dimension ..... 465

### ADOBE SYSTEMS

Adobe Illustrator '88 (incl. ATM) ..... 275  
Adobe Type Manager ..... 55  
StreamLine ..... 225  
True Form ..... 225  
Photoshop ..... 568  
Fonts ..... Please Call

### AEC MANAGEMENT SYSTEM

AEC Info Manager ..... 409  
FastTrack Schedule ..... 113

### ALDUS

Pagemaker ..... 382  
Freehand 2.0 ..... 325  
Persuasion ..... 319

### ALPHA GRAPHICS

Template Software - Pagemaker, QuarkXpress, Style, Ready Set Go ..... 25  
Clarix Smart Forms ..... 29

### ALSOFT

DiskExpress II ..... 54  
Master Juggler ..... 54

### ASD SOFTWARE

Fileguard ..... 88  
Fileguard Extended Ed ..... 120  
Fileguard Ext. Ed. 10 Pack ..... 559

### BLYTH SOFTWARE

Omnis 5 ..... 368

### BRODERBUND

TypeStyler ..... 119  
Drawing Table ..... 77

### CAERE

Omnipage ..... 539

### CE SOFTWARE

Quickmail 5 User ..... 169  
QuickKeys ..... 64  
In/Out 5 User ..... 126  
DiskTop 4.0 ..... 64

### CENTRON SOFTWARE

Casino Master ..... 38  
Casino Master Color ..... 45

### CHANG LABS

C.A.T ..... 219  
Rags to Riches 3-Pack ..... 229

### COMPUTER ASSOCIATES

Bedforbs Simply Accounting ..... 199

### DATA VIZ

MacLink Plus PC ..... 121

### DIGITAL ETC.

Business Sense ..... 249

### DIGITALK

SmallTalk V Mac ..... 119

### DREAMMAKER SOFTWARE

Cliptures Vol 1 or 2 ..... 69  
MacGallery ..... 26

### ELECTRONIC ARTS

Studio 8 ..... 279  
Studio 1 ..... 89  
Disk Tools Plus ..... 30  
Thunder II ..... 52

### EMERALD CITY SOFTWARE

SmartArt 1, 2 or 3 ..... 82  
LaserTalk ..... 159  
Type Align ..... 57

### FIFTH GENERATION

FastBack II ..... 108  
Suitecase ..... 44

### FOX SOFTWARE

FoxBASE +/ Mac 2.0 ..... 289  
FoxBASE +/ Mac Multiuser ..... 395

### GRAPHISOFT

Minicad+ 2.0 ..... 499  
BluePrint ..... 343

### GENERIC

1st CAD Level 1 ..... 83

### HAYES

Smartcom II ..... 85  
Smartmodem 9600 V ..... 975  
2400 with Smartcom II ..... 398

## SPECIAL R



**QUARKXPRESS** ..... \$455  
QuarkXpress is the top-of-the-line professional publishing software that combines word processing and graphics handling with sophisticated page design, layout and color tools.

### HJC SOFTWARE

Virex ..... 51

### HYPERGLOT

Kanjimaster ..... 89  
Word Torture Spanish, Russian, French, Italian & German ..... 29  
Verb Tutor for above languages ..... 39  
Tense Tutor for above languages ..... 39

### INFORMIX

Wing ..... 238

### INSIGHT DEVELOPMENT

MacPrint ..... 77

### ICOM SIMULATIONS

Tmon ..... 86  
On Cue ..... 35

### INSIGNIA

Soft PC ..... 242

### INTUIT

Quicken ..... 35

### LANGUAGE SYSTEMS

Fortran with MPW ..... 398  
Wild Things ..... 119

### MACROMIND

Macromind Director ..... 439  
Accelerator ..... 125

### MAGIC SOFTWARE

AutoSave II ..... 24  
BackMatic ..... 48  
POWERIcons ..... 38

### MATHSOFT

Mathcad Mac ..... 335

### MICROSOFT

Word 4.0 ..... 243  
Excel ..... 247  
Help for Excel with Excel purchase ..... 25  
Power Point ..... 247

### MICROSPOT

MacInteriors ..... 179

### MONOGRAM

Dollars & Sense ..... 79

### NEW HORIZONS

Wordmaker ..... 67

## SPECIAL R



**HYPERGLOT, KANJIMASTER** ..... \$89  
Hyperglot is the leader in Mac foreign language software in Spanish, German, Japanese, Italian & Russian. Digitized voices of native speakers enhance your ability to learn languages.

### ODESTA CORPORATION

Double Helix Version ..... 335  
GeoQuery ..... 189  
Data Desk Professional ..... 279

### PARACOMP

Swivel 3D ..... 289  
Model Shop ..... 369

### PORTFOLIO SYSTEMS

Dynodex ..... 86

### POWER UP

Address Book Plus ..... 51  
Address Book Plus with Binder ..... 75  
Calendar Creator ..... 35  
Fast Forms ..... 86

### PRO PLUS

Wall Street Investor ..... 420  
Accounting ..... 599

### QUARK

XPress ..... 455  
Style ..... 166

### SILICON BEACH SOFTWARE

Super Paint 2.0 ..... 124  
Digital Darkroom ..... 249  
Supercard ..... 124

### SOFTVIEW

MacInTax ..... 63  
MacInTax CA, CT, NY, NJ, MA ..... 56  
TaxView Pro Planner ..... 208  
TaxView 1065, 1120, 1120S ..... 279

### SOLUTIONS INTERNATIONAL

Smartscrap ..... 46  
SuperGlue II ..... 59  
The Curator ..... 69

### SOFTWARE VENTURES

Microphone II ..... 209

### SPRINGBOARD

Publisher II ..... 86  
Certificate Maker ..... 29  
Hidden Agenda ..... 42  
Sargon IV ..... 28

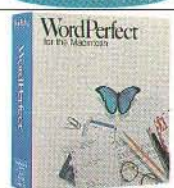
### STUDIOTRONICS

Colorset ..... 245

### SUPERMAC

Pixel Paint Professional ..... 395  
Superspool ..... 59  
Superlaser Spool ..... 88

## SPECIAL R



**WORDPERFECT** ..... \$208  
WordPerfect combines word processing features like parallel columns, macros and mail merge with network compatibility. Use WordPerfect with DOS, VAX, DG and UNIX.

### SYMANTEC

Think C 4.0 ..... 159  
LightSpeed P ..... 94  
SAM ..... 63  
SUM II ..... 104  
More II ..... 256

### SYMMETRY

Acta Advantage ..... 65  
HyperDA ..... 47  
KeyPlan ..... 234

### SYNERGY

Kaleidagraph ..... 155  
Versa Term-Pro ..... 275

### SYSTAT

Fastat ..... 130

### TIMEWORKS

Publish it! Mac ..... 219  
Hyperworks Organizer ..... 59

### TOPS

TOPS for Mac (new version) ..... 189  
TOPS for Mac 2.1 ..... 135  
TOPS for DOS ..... 109  
TOPS Flashcard ..... 156  
TOPS Flashbox ..... 115  
Teleconnectors ..... 26  
Netprint ..... 114

### T-MAKER

Write Now ..... 119  
ClickArt ..... From 33

### WILLIAM AND MACAIS

Sticky Business ..... 77  
My Disk Labeler ..... 24

### WOLFRAM

Mathematica for SE ..... 398  
Mathematica for Mac II ..... 678

### WORDPERFECT CORP.

WordPerfect 1.03 ..... 208

## SPECIAL R



**THE UNMOUSE** ..... \$183  
SuperMouse, Power Keyboard and graphics tablet—all in one! The touch tablet does everything a mouse can only faster. Simply touch to locate the cursor; press to click and program 60 macros or use the stylus to draw.

**Fax Your Corporate, Educational & International Orders Now!**  
30 Day Approved Credit



# CARE OF YOU!

**1-800-825-6227**  
For USA & Canada

**FAX 1-818-501-3760**

**AFTER SALES  
SUPPORT!**

**MONEY BACK  
GUARANTEE!**

## HARDWARE

<b>APPLE</b>	
MAC IICX	Call
MAC II CI	Call
MAC II XI	Call
Portable	Call
<b>AAPS CORPORATION</b>	
Micro TV	269
<b>ALTRA</b>	
Felix the Mouse	117
<b>ABATON</b>	
Interfax Fax-modem 12/48	262
Interfax Fax-modem 24/96	393
Quick Step Printer	2698
256 Grey Scale Scanner	1396
<b>AOX</b>	
DoubleTime-16	225
<b>BEST DATA</b>	
Smart One 2400	143
<b>CUTTING EDGE</b>	
30 Meg Hard Drive	488
45 Meg Hard Drive	539
45 Meg Removable	875
800K Floppy Drive	145
Monitor 19" Monochrome	945
ADB Keybd, inc. Quickkeys	124
<b>DATADESK</b>	
Mac - 101 Keyboard	133
<b>DAYNA COMMUNICATIONS</b>	
3.5" Drive 1.44 M	695
DaynaTalk Mac	139
DaynaMail Mac	177
Dual Drive 1.44, 360KB	788
Dos Mounter	65
<b>E MACHINES</b>	
Big Picture Z21for SE	1775
Big Picture Z21for Mac II	1849
Colorpage 15 inch monitor	1558
<b>FARALLON COMPUTING</b>	
MacRecorder	162
PhoneNET PLUS	33
PhoneNET PLUS (10 Pack)	219
PhoneNET Star Controller	815
Timbuku	93
Timbuku Remote	126
<b>HEWLETT PACKARD</b>	
Desk Writer	828
ScanJet Plus	1688
Paint Jet	1140
Paint Jet XL	1995
Laser Jet	Call
<b>IOMEGA</b>	
Benoulli II Single 44 Meg	1385
Benoulli II Dual 44 Meg	2085

<b>KENNECT TECHNOLOGY</b>	
Rapport	197
Drive 2.4	325
<b>KODAK</b>	
Diconix M150 Portable Printer	535
<b>KENSINGTON</b>	
Turbo Mouse	107
System Saver	64
Mac II Stand & Cables	62
Masterpiece Mac II	101
<b>KEYTRONICS</b>	
Keyboard, inc. Tempo II	118
<b>KINETICS</b>	
Ether Port II	517
Fast Path 4	2084
<b>MEGA GRAPHICS</b>	
19" Rival Mono SE/II	1175
19" 256 Greyscale	2298
19" Sony Color II, IICX	3999
19" Sony Color II, IICX 24 bit	5995
<b>MICROTEK</b>	
Flatbed MSF-300GS	1475
Flatbed MSF-400GS	2775
Color Scanner MSF-300Z	1965
<b>MICROTECH</b>	
40 Meg Quantum Drive	649
80 Meg Quantum Drive	1019
100 Meg Quantum Drive	Call
Removable Hard Drive	Call
<b>MICROTOUCH</b>	
UnMouse	183
<b>MOUSE SYSTEM</b>	
A+Mouse	61
A+ADB Mouse	79

<b>RADIUS</b>	
15" Full Page	695
19" Two Page Display	969
Accelerator Card 25 MHz	1089
Accel Card 25 MHz, inc Co-Pro	1478
<b>RASTEROPS</b>	
ColorBoard 264	693
ColorBoard 108+	864
ClearView/SE System 19"	1375
ClearView/II System 19"	1275
ProColor 708+ System 19"	3989
ProColor 724 System 19"	6139
FrameGrabber 324 NC	1288
SFX Video Option NTSC	1095
<b>RICOH</b>	
6000/PS PostScript Laser Printer	2398

### SPECIAL R



**ALPHAGRAPHICS TEMPLATES.....from \$25**  
Printshops of the future templates are available. Take advantage of this great timing software for use with Ready Set Go, Pagemaker, QuarkXpress, Style and Claris SmartForms.

### SPECIAL R



**FELIX THE MOUSE.....\$117**  
Finally a better mouse. Felix is only 6" by 6", with a handle that moves only one inch. Simply hold the handle like a pen & move across a 21" screen without running out of mousepad!

## POLICIES

- Visa, Mastercard & AMEX accepted.
- Credit card is not charged until order is shipped.
- California residents add 6.75% sales tax
- Hours: Mon - Fri, 10-11 EST.  
Sat Noon - 5 EST.
- Call (818) 501-6581. FAX (818) 501-3760.
- All prices & policies subject to change without notice.

### Shipping

- \$3. UPS Standard Air/Blue. Hardware over 10 lbs will be shipped ground.
- Same day shipping on orders placed by 9:00 pm EST, if items are on hand.

### Returns

- Defective software will be replaced immediately by the same item. Call (818) 501-0861 for R.A. number before return.

### Money Back Guarantee

- Most products have a 30-day money back guarantee. Please inquire when you order.

### SPECIAL R



**AUTOSAVE II.....\$24**  
Autosave II from Magic Software automatically saves the file you are working on. The save interval can be set from one to 99 minutes. Never loose your data again!

### SPECIAL R



**DATADESK MAC-101.....\$133**  
Increase your speed with the Mac-101 Keyboard. This award winning keyboard includes Master Strokes enhancement software. Assign any amount of keystrokes to one function key.

<b>NEC</b>	
MacSync	548
Intersect External CD Rom	699
Clip Art 3D for CD Rom	266
Color Thermal Printer	7188
<b>NEMONIX</b>	
68020 16Mhz SE Accelerator	378
Co-Processor	182
<b>ORCHID TECHNOLOGY</b>	
MacSprint II	209
MacFax/Modem 9600 Baud	435
<b>PLI (PERIPHERAL LAND)</b>	
Infinity 40 Removable Hard Drive	969
TurboFloppy 1.4	329
Optical Drive 635 Mb	3795
Turbo 50 Hard Drive	615
Turbo 200 Hard Drive	1459
<b>POLOROID</b>	
Data Recovery Disks	15
<b>PRACTICAL SOLUTIONS</b>	
Cordless Mouse	92
<b>QUME</b>	
Crystal Print Publisher	2845
Script Ten	2698

**DR. MAC, INC.**

14542 Ventura Blvd., Suite 200  
Sherman Oaks, CA 91403

**1-800-825-6227**

### SPECIAL R



**AATRIX CHECK WRITER II.....\$35**  
Balance your books before tax season! This easy to understand program not only keeps your finances under control but also reminds you when your payments are due. Eddy Honorable Mention.

## INTENSIVE CARE



Mac IICX + 4 meg RAM + 80 meg internal.....\$4499  
SIMMS 70 nanoseconds.....\$75

Circle 368 on reader service card







# HARD DRIVES

Hard Drives International is proud to carry the

## POWERDrive™



### EXTERNAL DRIVES FOR MAC Plus, SE & II

<b>POWERDrive</b> 20	40ms	\$349
<b>POWERDrive</b> 30	40ms	\$399
<b>POWERDrive</b> 45	40ms	\$449
<b>POWERDrive</b> 60	28ms	\$539
<b>POWERDrive</b> 80	28ms	\$588
<b>POWERDrive</b> 150	16ms	\$1096
<b>POWERDrive</b> 200	19ms	\$1144
<b>POWERDrive</b> 320	16ms	\$1796
<b>POWERDrive</b> 600	16ms	\$2796

All units are factory-tested and pre-formatted for hassle-free setup. Each steel external case comes complete with power supply, cabling, Ontrack's "Disk Manager Mac" software and a comprehensive reference manual. High Quality Seagate, Micropolis, Quantum, Imprimis, MiniScribe or Conner hard drives available. Autoparking heads - Low Power - Low Heat. No assembly required. **Just POWER UP and Go!**

### 45Mb Removable Hard Drive



#### Compare

with Ehman  
and Mass  
MicroSystems!

- Uses SyQuest™ mechanism
- Unlimited Capacity
- Super Fast - 25ms!
- Includes One cartridge

## \$749

Factory-trained Technicians  
are on hand to answer  
your questions!



**MMC**  
MICROCOMPUTER  
MARKETING COUNCIL  
of the Direct Marketing Association, Inc.

### INTERNAL KITS FOR MAC SE, II, IIcx & IIci

<b>POWERDrive</b> 20/I	Seagate	40ms	\$299
<b>POWERDrive</b> 30/I	Seagate	40ms	\$349
<b>POWERDrive</b> 45/I	Seagate	40ms	\$399
<b>POWERDrive</b> 40/I	Quantum	19ms	\$449
<b>POWERDrive</b> 80/I	Quantum	19ms	\$684
<b>POWERDrive</b> 105/I	Quantum	19ms	\$799
<b>POWERDrive</b> 200/I	Conner	19ms	\$996

Comes complete with a pre-formatted, pre-tested hard drive, formatting & partitioning software, mounting hardware, cabling & How-To manual.



### EXTERNAL DRIVES FOR MAC Plus, SE & II

45Mb	Seagate	40ms	\$ 499
40Mb	Quantum	19ms	\$ 549
80Mb	Quantum	19ms	\$ 799
105Mb	Quantum	19ms	\$ 899

Includes a pre-formatted, pre-tested hard drive, UniMac external case, power supply, cables, manual and formatting & partitioning software.



Hard Drives  
December 1988



Top Ten Mail-Order Company  
PERSONAL COMPUTING



June 27, 1989  
Mass Storage Mail Order



Insight  
Another  
Insight  
Company  
Distribution Network Inc.

1912 W. Fourth Street  
Tempe, AZ 85281  
(602) 967-5128  
FAX: (602) 829-9193  
Int'l FAX: (602) 921-8312

In U.S. & Canada  
**(800)-765-DISC**  
Corporate Sales: (800) 729-3472  
24 hr. Order Status: (800) 776-3472  
International orders: (602) 967-7435



Never a Surcharge  
for Visa & MC!

Price and availability subject to change. All items are new with manufacturer's warranty. 3% surcharge for American Express and COD orders. P.O.'s accepted from qualified buyers 2/10, NET 20, 5% surcharge. 30-day Guarantee conditions: Shipping & handling charges not refundable; product must be in original condition. Add \$11 shipping for Military APO/FPO Express delivery. Hard Drives International is a division of Insight Distribution Network, Inc. All trademarks and trade names are the properties of their respective owners.

MW0490

All products  
come with a  
**30 Day**  
**"Worry-Free"**  
**Guarantee**  
and  
**Replacement**  
**Policy**



# PRINTERS & MONITORS

## Dot Matrix



**Seikoshia**

Imagewriter/Mac Compatible

## EPSON Letter Quality Printers

LQ-510\* .....\$339  
LQ-850, LQ-950, LQ-1050, LQ-2550.. Call  
EPSON LQ Printer Software .....\$59  
(\*Requires Serial Card)



**Hewlett Packard**

H.P. DeskWriter

300 d.p.i. ....\$849

## Accelerator Boards

Radius 16 .....\$595

## Hard Drives

### CMS Externals

MacStack 20 .. 32ms .....\$398  
MacStack 30 .. 28ms .....\$488  
MacStack 45 .. 28ms .....\$548  
MacStack 60 .. 38ms .....\$648  
MacStack 80 .. 28ms .....\$748  
PD 100 .. 25ms .....\$898  
PD 170 .. 18ms .....\$1498  
44 Megabyte Removable .....\$848

### CMS Internals

(SE, II, IIcx)  
40 Megabyte .....\$478  
100 Megabyte .....\$848  
200 Megabyte .....\$1498

### Everex Hard Drives

External/Internal ..... Call  
Cutting Edge 800K .....\$149

### Tape Back-up Systems

CMS TS-60 .....\$698  
Cache 150mg .....\$798

### GCC Technologies

Write Move Portable Ink-Jet .....\$519



GCC PLP Laser .....\$1595

PLP Plus Laser .....\$1695

Call for Systems/Simms Pricing

## Monitors



**Magnavox 14" Color Mac Display**

640 x 480 Resolution .....\$509  
Fine Dot Pitch, Tilt & Swivel Base

## E-Machines

Big Picture Z21 .....\$1798  
Big Picture Z21 IQ .....\$2598  
Big Picture T-16 color .....\$2898  
Big Picture T-19 color .....\$4498  
New ColorPage .....\$1698

## NEC

MacSync .....\$528

## Radius

Full Page Display .....\$1098  
Other Models ..... Call

## Raster Ops

Colorboard 264/2 .....\$728  
Boards/Monitors ..... Call

## Sigma Designs

Pageview SE 15" .....\$798  
Siverview 21" .....\$1598  
Siverview 21" (GS) .....\$2398

## Datadesk Keyboard

Mac 101 or ADB version .....\$129

## Keytronics Keyboard

MacPro .....\$119

## Modems

Beverly Hills 2400 External .....\$129  
Beverly Hills 2400 Internal .....\$399

*Beverly Hills  
Computer™*



**Computer professionals  
since 1975.**

**1-800-426-8166**

**Fax Machine  
(213)675-2522**

**From Beverly Hills  
(213)273-3710**

279 South Beverly Drive, Suite 1200, Beverly Hills, California 90212

## SHIPPING

All items in stock will ship in 24 hours. We offer daily service from Federal Express, UPS, U.S. Postal Service. Call for handling and shipping fees. Minimum shipping charge \$4.00.

- Plain and simple. Hardware; your satisfaction guaranteed or your money back.
- Software: defective software will be replaced. Manufacturers policies prohibit us from offering refunds on opened software.
- We accept most major credit cards with no surcharge added.

- Your credit card is not charged until we ship.
- Please allow 10 days for personal and company checks to clear.
- C.O.D. orders accepted.
- We gladly accept purchase orders from most major institutions.
- International orders accepted.

- California, Texas, Georgia and Arizona residents please add the appropriate local sales tax.
- To place orders call Monday thru Friday 7AM to 6PM P.S.T..
- Prices and availability subject to change.

Circle 5 on reader service card





# MacProducts USA



## UPGRADES



1MB SIMM's 70/80/100 ns	call
4MB SIMM's	call
Lifetime Manufacturer's Warranty!	
Laptop SIMM's	call
256K SIMM's	\$24
Magic SCSI	\$69
128K-512K Upgrade	\$149
128K-1024K (1 MB) Upgrade	\$295
512K-1024K (1 MB) Upgrade	\$299
512K-2048K (2 MB) Upgrade	\$399
512K-4096K (4 MB) Upgrade	\$599
800K Drive and ROM's	\$299
SE/30 Upgrade	\$1399

## MAGICNET

100% Flash Box, Phone Net,  
Local Talk compatible 19.00

## ACCELERATORS 020/030

16 mhz 68030 +, SE	\$599
25 mhz 68030 +, SE	\$999
16 mhz 68020 SE	\$499
25 mhz 68020 SE	\$895
33 mhz 68020 SE	\$1999
68881, 68882 Co-Processors	\$125/\$199
PMU - 68851	\$179
030 Available now. Call for more info.	
Run System 7.0 on 512, Mac + and SE	

## MAGIC DRIVE TAPE



**MagicTape 60**  
5 1/2  
MacUser, December 1989

	Internal	External
20 megabyte	\$389	\$449
30 megabyte	\$399	\$549
Quantum 40	\$475	\$599
Quantum 80	\$699	\$849
Quantum 105	\$749	\$899
45 megabyte	\$475	\$599
45 mb Removable		\$799
45 mb Cartridges, ea		\$89
60 megabyte	\$549	\$649
80 megabyte	\$649	\$749
60 mb Tape Backup		\$695
150 mb Tape Backup		\$895
1.2 gig Tape Backup		\$2995
2.3 gig Tape Backup		\$3995
100 mb CDC	\$850	\$950
150 mb CDC	\$1395	\$1495
300 mb CDC	\$1995	\$2150
600 mb CDC	\$2800	\$2950
600 mb Read/Write Optical Drive		\$3395

**MagicDrive 91 - "The Fastest Unit Tested" - MacUser**

## MAGICMODEM

100% Hayes Compatible - Auto Dial/  
Auto Answer 2400/1200/300 Baud -  
2-Year Warranty \$99  
White Knight (Red Ryder 11.0) \$75

## DISPLAY SOLUTIONS



19" B&W Monitor - 2 Page Display.  
72 dpi, 78 hz. Includes card for  
+, SE, SE/30, II, IIX, ILCX \$999  
13" & 14" 100% Apple Compatible  
8 bit color card \$299  
13" 8 bit color card for SE/30 \$499  
19" 8 bit color card for Mac II series \$499  
19" 32 bit color card Mac II series \$2995

## SmartCACHE

- SCSI Disk Cache
- Tracks your history and optimizes using 64 caching algorithms
- Cuts 30-50% off the access time of any SCSI hard drive
- Write through cache for maximum data integrity

**\$99**

## SOFTWARE

Adobe Fonts	40% off!!
Adobe ATM/ATM Plus	56/109
Big Thesaurus	59
4th Dimension	call
Freedom of the Press	265
Freehand v2	315
Illustrator '88	285
Liaison	call
Mac Link +	124
Macromind Director	448
Mathematica for Mac II	669
Microleague Baseball	call
Microphone II	219
Microsoft Products	call
Model Shop	379
OmniPage	545
PageMaker 3.1	385
Photo Mac	509
Pixel Paint Professional	395
Quark XPress 2.12	475
Quicken	36
QuickKeys	64
Read It OCR	248
ResumExpert	call
Retrospect	154
SAM	59
Soft PC	244
Suitecase II	44
SUM II	95
SuperCard	call
Twivel 3D	289
Twivel Bundle 3.0	call
White Knight	75

## SYSTEMS

SE/30 - 2799 - Mac II cx - 3299  
Laptop - call  
All systems and peripherals available.  
Call for best prices.

## HARDWARE

<b>Accelerators</b>	
Dove Marathon 020 MSE 1	429
Dove Marathon LAN 020	1009
Dove Marathon 030	969
Dove Marathon Racer	call
Orchid Mac Sprint	219
<b>Co-Processors</b>	
68851 PMMU	149
68881 16 MHz	125
68881 25 MHz	225
68882 16 MHz	199
68882 25 MHz	299
68882 33 MHz	495
68882 40 MHz	595
<b>Digitizers</b>	
Kurta IS/ADB Tablet 8.5x11	255
Farallon MacRecorder	159
FrameGrabber 324 nc	1999
Personal Vision	2119
Audio Media	call
<b>Fans</b>	
Kensington System Saver SE 51	57
Mobius Fanny Mac	57
Mobius SE Silencer	34
<b>Mice/Keyboards</b>	
Abaton ProPoint	87
Cutting Edge Mac105	119
Datadesk Mac 101	135
Kensington TurboMouse	109
Keytronics MacPro	119
Quickstick 512+ or ADB	39/49
A+ Optical Std or ADB	69/79
<b>Modems</b>	
Abaton InterFax 24/96	412
Hayes 2400	385
Orchid MacFax	446

## HARDWARE

<b>Monitors</b>	
AppleColor 13"	call
Magnavox Color 14"	499
NEC MacSync 14"	552
<b>Networking/Communications</b>	
E-MAC SpeedTalk	99
Kinetics Etherport	443
Shiva NetModem 2400	399
TOPS FlashBox	123
TOPS FlashCard	155

**We carry  
over 4,000  
products  
for the  
Macintosh**

<b>Printers</b>	
GCC BLP and PLP	call
HP DeskWriter	call
HP DeskJet	call
HP PaintJet XL 32 bit	call
QMS ColorScript 100	call
QUME Crystal Print	3195
QUME ScriptTen	3195
Ricoh 6000PS 2	2399
Seikosha Dot Matrix Printer	210
Sharp JX 730	call
Texas Instruments	call

## HARDWARE

<b>Printer Interfaces</b>	
GDT JetLink Express	call
Orange Micro Grappler C/Mac 76	
Orange Micro Grappler LS	102
Orange Micro Grappler LX	125
<b>Scanners</b>	
Abaton 300GS	1350
Logitech Scan Man	325
Microtek 300Z w/Interface	1899
Sharp JX 450 Color	5245
Sharp JX 100	716
Sharp IEEE interface	469
LightningScan	369
ThunderScan	179
<b>Storage</b>	
CMS SD30	459
Cutting Edge 800k	149
Kennetech Tech Drive 2.4	359
Rapport	215
NEC CD ROM w/interface	825
<b>Video</b>	
AAPS Micro TV	259
Computer Eyes BW or Color	call
<b>Video Cards</b>	
TruCapture 324	1989
264 24 bit	699
264 SE/30 24 bit	907
<b>Disks, Ribbons, etc</b>	
Polaroid DS	12
Polaroid DS HD	24
MacDisk Bulk (50)	38
Sony Boxed (10)	13.50
Sony Bulk (50)	49
Black Ribbons	3
Colored Ribbons	3.50
60 meg Tapes	24
150 meg Tapes	35

## ORDERING

Orders ONLY: 1-800-622-3475  
Information: 1-512-343-9441  
Fax: 1-512-343-6141  
Tech Support: 1-512-343-9441  
Singapore  
Voice/Fax: 65 250 3423

Hours: 7am - 10pm, M-F,  
10am - 6pm S-S CST

Tech Support Hours:  
9am - 5pm, M-F CST

Minimum Order: \$40.00



Payment: Visa, MasterCard,  
American Express, Optima (no  
surcharge), company & per-  
sonal checks, COD, and  
Company & Institution PO's.  
Net 15. No AmEx on CPU's.  
\$5000 maximum on COD's.

Tax: Texas residents only,  
add 7.1% sales tax.

Prices and items are subject to  
change and availability.

Terms: You are not charged  
until your order is shipped.  
Returns may be subject to a  
restocking fee.

Shipping: Minimum \$4.50 --  
Emery, Airborne, UPS Next  
Day & 2nd Day Air, US Mail.

Leasing: Available on orders  
over \$2500. Call for information

"We really know your Mac."

8303 Mopac Expressway • Suite 218 • Austin, Texas 78759 • USA • 1-800-622-3475

# 1-800-MAC-DISK



*A quality product from MacShopper*

# The next best thing to a new Mac is a Power User's Memory Upgrade!

## 1MB SIMMs Modules...

### *Now only \$89 each.\**

Now you can unlock the awesome power in your Mac and use it to its full potential with a Power User's Memory Upgrade from MacShopper. By replacing the existing 256K memory chips with our powerful 1MB memory modules you can bring more brain power to your Mac than you thought possible.

Right now our price for these high quality SIMMs (Single Inline Memory Modules) is lower than ever. And a memory upgrade is easy to install yourself, in not much more than half an hour.

#### WHY MORE MEMORY?

Have you noticed that some of the latest software requires too much memory to run on your Mac? Would you like to run MultiFinder plus two or more programs—all at the same time? Are you tired of having to quit your word processor just to answer a question from a spreadsheet?

Well, added memory is a must! Join the thousands of Mac users who are taking advantage of low SIMMs prices right now.

And quite apart from the ability to do multi-tasking, added memory speeds up your disk access time and eliminates delay when selecting menu items.

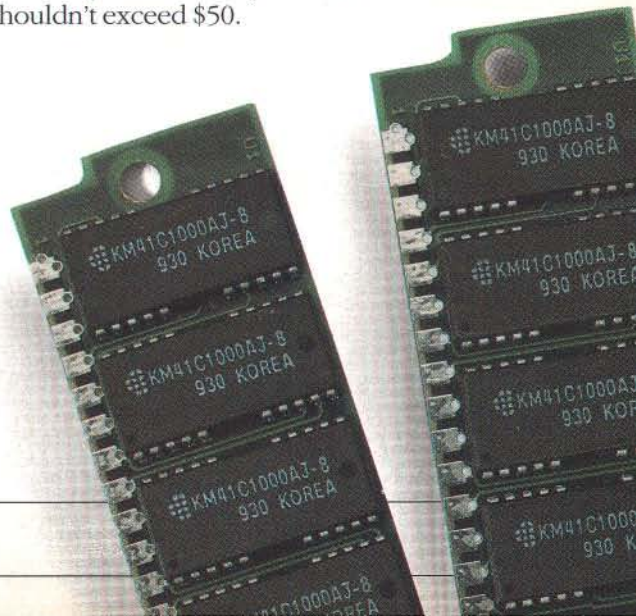
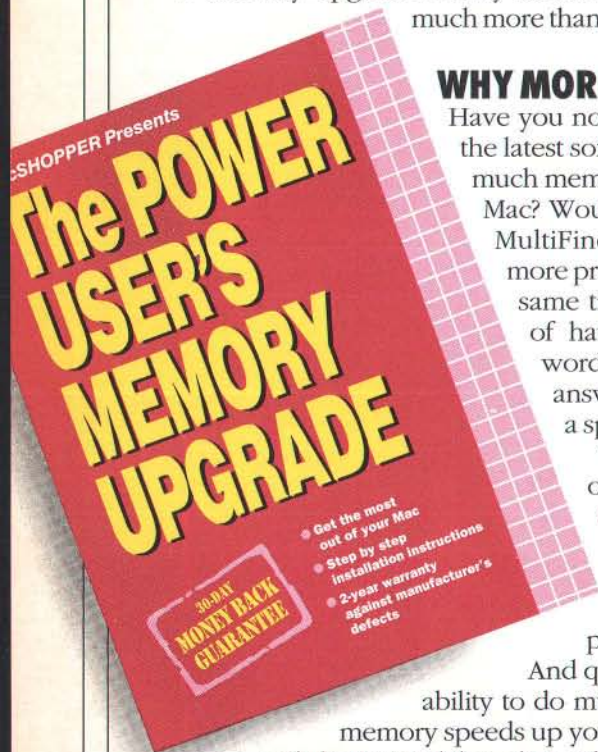
#### WHAT DO I NEED?

It couldn't be simpler. Call and we'll help you select the right Power User's Memory Upgrade for **your** Mac. We'll rush it to you overnight for just \$7 extra. You'll find installation at home is easy when you use our "step-by-



step" instruction manual. The whole job should be complete in less than one hour. You'll need a simple tool kit which is available for just \$15.

If you prefer, you can have a computer store install your SIMMs for you. Their service technicians have the necessary tools and expertise. The total cost shouldn't exceed \$50.

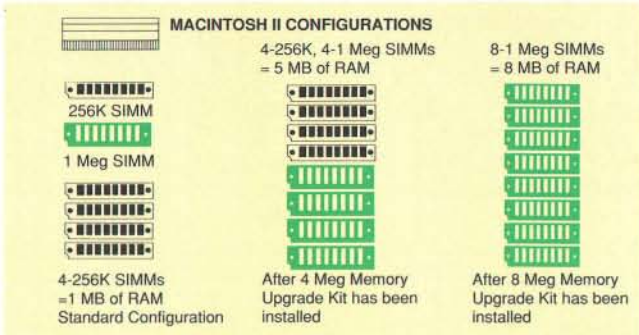
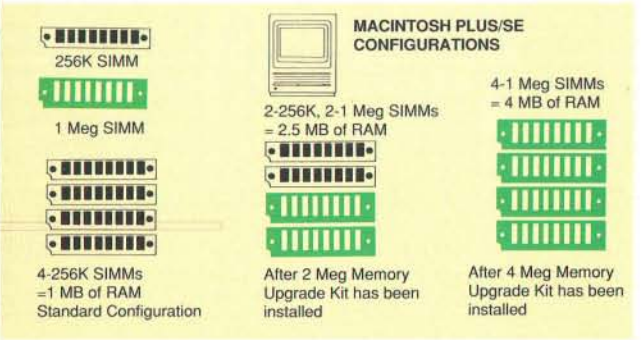


Circle 440 on reader service card



**The Mac Plus and Mac SE** have four available slots on the motherboard, which originally contain four 256K SIMMs modules — totalling 1 megabyte (1MB) of memory. To upgrade, you can replace each 256K module with a 1MB module, but you must do this in pairs.

Replace two 256K modules and you will have a total of 2.5MB of memory. (That's the two new 1MB modules plus the original two 256K modules.) Replace all four modules and you'll have 4MB. (You should save the 256K modules for later use if you want to pass your Mac on to someone else.)



**The Mac II, IIfx, IIfx and SE/30** each come with a total of eight slots. The standard configuration has four 256K SIMMs modules, or a total of 1MB. Here, memory must be upgraded in multiples of four. This allows for expansion from 1MB to 4MB, 5MB or 8MB.

Remove the four 256K modules and replace with 1MB modules and you have 4MB. Leave the original modules and add four 1MB modules and you get 5MB. Removing the original modules and adding eight new 1 MB modules will bring you to 8MB of memory.

# FAST, FASTER, FASTEST

SIMMs come in different speeds and are calibrated in nanoseconds (ns) from 70 to 120ns. Anything faster than 120ns doesn't much help any Mac but the IIfx.

The system doesn't respond any faster anyway. But you can always take your memory chips with you when you move on to a new Mac, so there may be an advantage to speed at a later date.

# QUALITY CONTROL

MacShopper buyers and agents scour the world in search of top quality components for our SIMMs modules. They're supplied only by top grade manufacturers

like Samsung, Siemens, Texas Instruments, Fujitsu, Intel, etc. Each unit is tested for performance, quality and noise, in temperatures from freezing to 158°F.

Install a Power User's Memory Upgrade and working with your Mac will never be the same again! Call MacShopper now and we'll help select the right memory upgrade. We'll ship UPS Ground, free, or overnight for just \$7.

1MB 120ns .... \$89 each	1MB 80ns ..... \$109 each
1MB 100ns .... \$99 each	1MB 70ns ..... \$119 each

**MacSHOPPER**  
**1-800-622-7006**

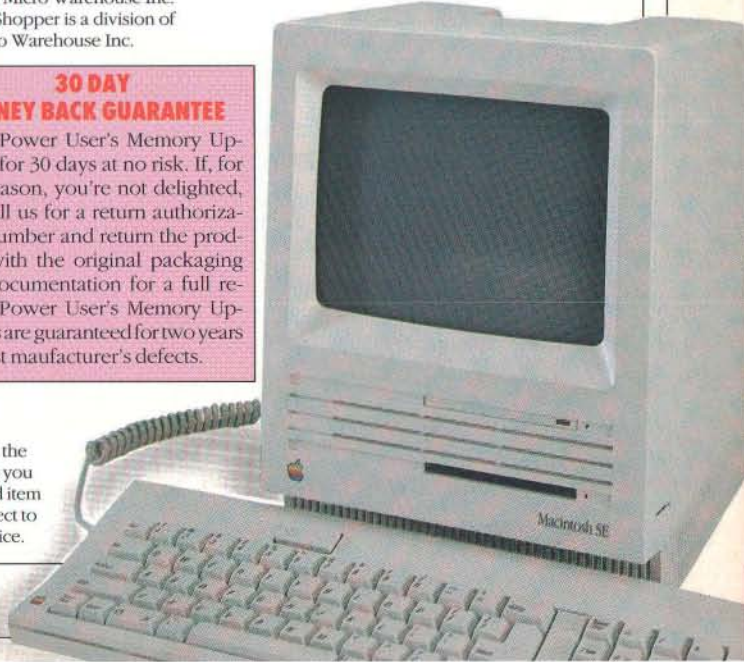
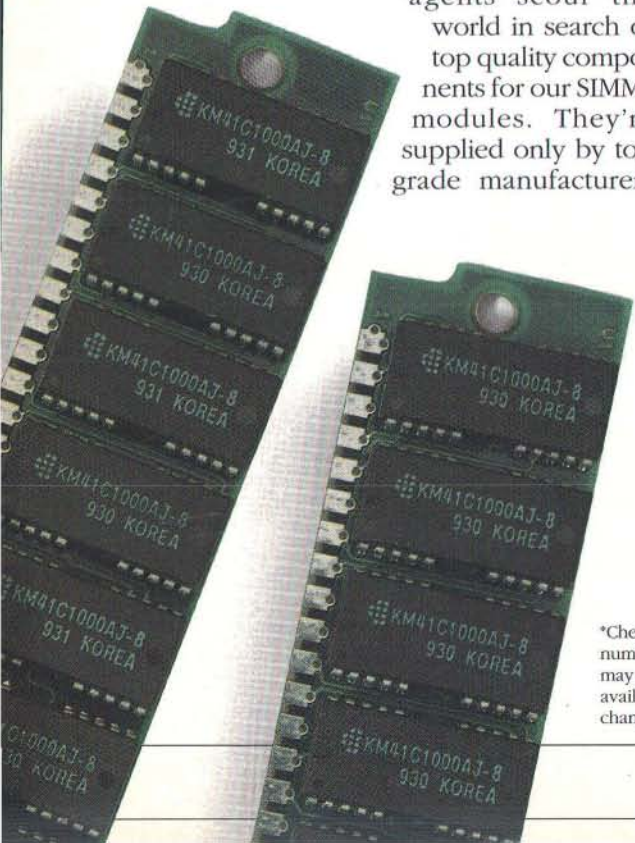
Call TOLL-FREE 24 hours a day, seven days a week.  
(In Canada, call 1-800-243-5622) MSWDØ

©1990 Micro Warehouse Inc.  
MacShopper is a division of  
Micro Warehouse Inc.

**30 DAY MONEY BACK GUARANTEE**

Try a Power User's Memory Upgrade for 30 days at no risk. If, for any reason, you're not delighted, just call us for a return authorization number and return the products with the original packaging and documentation for a full refund. Power User's Memory Upgrades are guaranteed for two years against manufacturer's defects.

\*Check the chart for the number of modules you may need. Price and item availability are subject to change without notice.







# The Macworld Catalog

## Hardware

Bar Code .....	283	Medical .....	293
Computer Systems .....	283	Mental Arts .....	294
Data Acquisition .....	285	Music/MIDI .....	294
Emulators .....	285	Programming Tools .....	294
Memory Upgrade .....	285	Public Domain .....	294
Peripherals .....	288	Real Estate .....	295
Printers .....	288	Reference .....	295
Scanners .....	288	Religion .....	295

## Software

Bar Code .....	289	Self Improvement .....	296
Business .....	289	Spreadsheets .....	296
CAD/CAM .....	289	Statistics .....	296
Clip Art .....	289	Training .....	296
Communications .....	289		
Desktop Publishing .....	290		
Educational .....	290		
Engineering .....	290		
Entertainment .....	291		
Fonts .....	292		
Genealogy .....	292		
Health .....	293		
Hypercard Stacks .....	289		
Languages .....	293		
Lottery .....	293		

## Miscellaneous

Business Opportunity .....	299
Mailing Lists .....	299

*Categories are subject to change*

## *The Macworld Catalog* Advertising Rates & Information

*The Macworld Catalog* section is a monthly link-up for advertisers and volume purchasers of Macintosh-related products and services. The Catalog offers advertisers a low-cost marketing opportunity and provides readers with a timely, easy-to-use menu for product buying.

Display ads are sold by column inches (2" minimum). Standard red is available as a second color. Text-only listings are available for a minimum of three issues at \$450 per issue.

For more information on *The Macworld Catalog*, call 800/888-8622.

## *The Macworld Catalog* Advertising Sales Staff

Beverly Schneider, Telemarketing Sales Manager  
Niki Stranz, Western Account Manager, 415/978-3105  
Carol Felde, Eastern Account Manager, 415/978-3152

501 Second Street  
San Francisco, California 94107  
800/888-8622

## Services

Computer Insurance .....	296
Data Conversion .....	296
Desktop Publishing .....	297
Laser Recharge .....	297
Training .....	297

## Accessories

Mouse Pads .....	298
Supplies .....	298

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## Hardware Bar Code

### BAR CODE & MAGNETIC STRIPE READERS FOR MACINTOSH PLUS, SE & II

Connects on keyboard or ADB  
Requires no additional program or port  
Does not affect keyboard or mouse  
Industrial quality, heavy-duty units  
Also available

SmartCard encoder/reader  
Magnetic encoder  
Code 39 UPC & Printing Software  
Portable Bar Code Reader

**TPS Electronics**  
4047 Transport Street  
Palo Alto, CA 94303  
415-856-6833 800-526-5920  
Telex: (Graphnet) 371 9097  
FAX: 415-856-3843

CIRCLE 666 ON READER SERVICE CARD

## BAR CODE READERS

For All Macintosh Models

- No software changes
- Attaches as 2nd keyboard or through ADB
- Installs in seconds
- Reads UPC/EAN, Int 2 of 5, Codabar, Code 128, MSI, and Code 39
- Outstanding read rate

**Complete with Steel Wand—\$399**  
Complete with Laser—\$989  
Magstripe Option—add \$100  
64K Portable Reader—\$899

**1 YEAR WARRANTY**  
**30 DAY \$\$ BACK GUARANTEE**  
CA 408-458-9938 **800-345-4220**

417 Ingalls Street  
Santa Cruz, CA 95060

**WORTHINGTON**  
DATA SOLUTIONS

CIRCLE 555 ON READER SERVICE CARD

Call The Macworld Catalog  
and see why.



**800.888.8622**

## EZBarcode®



### Bar Code Reader for Macintosh Plus, SE, II PC-WEDGE II ..... \$309

- Works with any program — no software required
- Connects to keyboard or computer • Recognizes bar code type automatically • Reads all standard bar code types • Supports full ASCII, check digits, add-ons, preambles, postambles, macros, and more
- Automatic setup from bar code menu • 5 year warranty



**TimeKeeping Systems, Inc.**  
1306-W East 55th Street • Cleveland, OH 44103  
Phone: (216) 361-9995 • Fax: (216) 361-0030

CIRCLE 695 ON READER SERVICE CARD

## Computer Systems

### Build Your Own Mac

from catalog parts & save \$\$\$ over new or used systems. Save \$\$\$ on upgrades to your own Mac too!  
Assemble your CAT Mac from readily available new/used catalog parts with little or no soldering req'd. Have fun, gain experience, break no laws. Read "Build Your Own Macintosh" & learn secrets. Illustrations/photos show how. Makes a great gift. \$24.95 postpd. Visa/MC, check.

**Brant Associates**  
4420 SE Mark Kelly Ct.  
P.O. Box 68708  
Portland, OR 97268

### Extraterrestrial Prices

Beat all prices unless temporarily sold out! Call for updated prices. COD

MacPlus ..... \$1100  
SE2 ..... \$1929  
SE2/32mb, SE/30-4/80mb \$low  
IICx ..... \$3319  
IICx 2/45mb ..... \$3729  
IICx 4/105mb ..... \$4625  
LaserwriterIINT ..... \$3438

IINTx \$4889 w/cable toner  
MacPlus 20mb \$395, More....  
**Jupiter Computers**  
6224 Knox Ave.  
Fontana, CA 92336  
714/829-2953

# Here's The Difference WE BUY MACS

### The Maya Guarantee

Satisfaction is guaranteed. Maya Computer offers a one year parts & labor warranty on both new and used Macintosh computers. Return any product in saleable condition within 30 days of purchase for a cheerful refund or credit.

### We Fix Macs

Maya's expert service technicians can save you hundreds of dollars by doing fully warranted repairs of only what's broken, all the way down to board level. We don't just swap out entire modules to fix an inexpensive component.



### We Sell Macs...one system or complete offices.

Give Maya Computer a call before you buy. At Maya Computer we use the technology we sell. Strictly Macintosh, Simply The Best!

#### Used Macintosh Systems with Maya's Exclusive One Year Warranty

Macintosh 128k ..... \$295  
Macintosh 512K E ..... \$625  
Macintosh Plus ..... \$995  
Macintosh Portable w/ 40meg HD ..... \$4757

#### New Equipment:

**Printers:**  
Toshiba 24 pin dot matrix printers w/MacMatrix:  
P321 SL 24 pin ..... \$561  
P321 SLC color ..... \$714  
P341 SL wide carriage ..... \$750  
P351 SX FAST 360cps ..... \$1165  
Océ Model 5232B ..... \$13,432  
Color PostScript Printer ..... \$13,432  
Apple ImageWriter II ..... \$435  
Texas Instr. PS35 microLaser ..... \$2340

Kodak Diconix M150  
Portable Ink-jet printer  
w/ATM ..... \$522

**SyQuest Drives & Cartridges:**  
SyQuest cartridges: \$79  
DataRemovable 45 meg drive w/cartridge ..... \$849  
MicroTech 45 meg drive w/cartridge.....\$849



#### Video Products:

Micron Xceed 8 bit video card for Mac II or SE/30 13"Monitors ..... \$380  
AAPPS MicroTV ..... \$283  
E-Machines Colorpage 15 ..... \$1199  
Sony CPD1304HG 14 inch Trinitron Monitor ..... \$775

#### Software:

CE Software QuickMail 5 user ..... \$175  
CE Software QuickMail 10 user ..... \$259  
CheckMark Multileader ..... \$245  
CheckMark Payroll ..... \$183  
Tops v2.1 ..... \$138

#### Power Supplies:

Macintosh 128, 512 or plus NEW ..... \$175  
Macintosh 128, 512 or Plus, reconditioned ..... \$125  
Mac SE or SE/30 NEW ..... \$288  
Mac II or Ix NEW ..... \$352  
Mac IICx or IICx NEW ..... \$343  
Mac Plus Batteries.....\$7  
Also...Hard Drives, Scanners, Input Devices, and everything for the Mac.

See us at  
MacWorld  
Booth  
#5528

# Maya

computer

Waitsfield, Vermont

**800-541-2318**

CIRCLE 605 ON READER SERVICE CARD

**Mac One** Your #1 Discount Source For Macintosh  
RPR 100 SE Avenue NY 11756

MacSE/dual floppy \$1899 • MacSE20/HD20 \$2099  
MacSE/30HD40 \$3199-MacSE/30 4mb/HD80 \$3999  
MacIICx/HD40 \$3795 • MacIICx 4mb/HD80 \$4395  
MacIICx 2mb/HD40 \$4799-MacIICx 4mb/HD80 \$5399  
MacPortable/40 \$4699 • LaserWriter II NT \$3499  
Ricoh PS-6000 Laserprinter(better than IINT)\$2479

Micron Exceed 8-bit Video Card for II & SE-30 \$399  
Quantum Internal Drives:80Meg \$669/105Meg \$739  
Quantum External: 40 Meg \$529 80 \$749 105 \$829  
DataCopy 730GS Scanner w/ Accutext Free! \$1299  
Abaton 300GS 8-bit Scanner w/s.w. bundle \$1379  
Abaton INTERFAX Faxmodem 2400/9600 \$399

"We Always Beat The Competition...Call Us LAST!"

•Mac•Lasers•Drives•Scanners•Monitors•

For Quotes (516)922-2805 • FAX (516)922-2803

Order Line ONLY (800)234-MAC1 Monday-Friday 9am-6pm EST

CIRCLE 617 ON READER SERVICE CARD

For your ad to appear on The Macworld Catalog screen, call 800/888-8622.

**Continued...**





# The Macworld Catalog

## Your 'Mac' Specialists Mac-In-Stock™



Let Us Help You Configure Your Ideal Mac System!

### Career Starter System

Macintosh SE  
1MB RAM, 1.44FDHD  
Apple 20MB Hard Disk  
Apple Keyboard & Mouse  
Imagewriter II & Cable  
Microsoft Works  
You Save \$1,721 !!

Retail **Mac-In-Stock**  
\$4,518 **Only \$2,797**

### Executive System

Macintosh SE/30  
2MB RAM, 1.44 FDHD  
Apple 40MB Hard Disk  
Extended Keyboard & Mouse  
Hewlett-Packard DeskWriter  
MS Word and MS Excel  
You Save \$2,915 !!

Retail **Mac-In-Stock**  
\$7,712 **Only \$4,797**

### WP/Publisher System:

Mac II CX, 5MB RAM, 80MB HD  
Extended Keyboard & Mouse  
Apple Portrait Display & Card  
Apple Laserwriter II SC  
Microsoft Word, PageMaker  
Adobe Type Manager  
You Save \$5,332 !!

Retail **Mac-In-Stock**  
\$13,892 **Only \$8,560**

### Microsoft Specials!

Works: \$169 Word: \$219 Excel: \$229

### Professional Color Tools

SuperMac 19" Color Monitor \$3195  
Spectrum III 24-Bit Card/Accel \$3375  
RasterOps 264 (MacII) Card \$749  
RasterOps 264 (SE/30) Card \$949

### Memory Upgrades

For All Macs and Laserwriter II NTX

### Macintosh SE & SE/30

			SE	SE/30
w/1.44	FDHD	1M RAM	1860	2849
w/Apple	20HD	1M RAM	2149	---
w/Apple	40HD	2M RAM	2439	3219
w/Rodime	45HD	2M RAM	2659	3649
w/Apple	80HD	4M RAM	---	4095
w/Rodime	105HD	5M RAM	3259	4249
w/Rodime	210HD	5M RAM	3609	4595

### Macintosh II CX & Ci

			CX	Ci
w/1.44	FDHD	1M RAM	3369	4699
w/Apple	40HD	1M RAM	3869	5229
w/Rodime	45HD	2M RAM	4099	5495
w/Rodime	70HD	5M RAM	4488	5898
w/Apple	80HD	4M RAM	5089	6499
w/Rodime	105HD	5M RAM	4769	6099
w/Rodime	210HD	5M RAM	5098	6444

### Monitors

13" Color \$719, 8-bit Card \$469  
Portrait Monitor + Card \$1199  
Apple 2-Pg + Card \$1969  
Radius 2-Pg Color + Card \$4646

### Printers

Apple Imagewriter II \$437  
Hewlett-Packard Deskwriter \$879  
Apple Laserwriter II NT \$3539  
Apple Laserwriter II NTX \$5039

### Best-Priced Portables!

w/1.44 SuperDrive	
Retail	Our Price
\$5799	\$4,349
w/40M HD	
Retail	Our Price
\$6499	\$4,875



### Fax Your Request: 213-322-1486

©1990 2M Group  
dba Mac-In-Stock™  
El Segundo, CA  
(213) 322-1455

Apple, Macintosh, Mac Imagewriter, Laserwriter, SE, SE/30, CI & CX, Works, Word & Excel, Color, ScanJet, Deskwriter & Portrait, Spectrum III, PageMaker & Photoshop are trademarks of Apple Computer, Inc., Microsoft Corp., Rodime Systems, Hewlett-Packard, SuperMac, Aldus, Aviation, & Silicon Beach, respectively.

**TERMS:** Personal or business checks. Leasing available for qualified businesses. COD-cashier's check accepted at additional charge. Shipments by UPS or FedEx F.O.B. El Segundo. CA residents add sales tax. Prices subject to change without notice.

**WARRANTY:** We support manufacturers' warranties for the full term on all items sold. We will repair or replace at our expense.

Call Toll-Free: 800-633-1538 • Mon-Sat • 7-5 Pacific Time.

CIRCLE 692 ON READER SERVICE CARD



Shreve  
Systems  
2421 Malcolm St.  
Shreveport, La. 71108

## Mac Parts!

**We BUY Systems!**  
**Trades & Upgrades-CALL!**

1-800-227-3971 La. call 318-635-1121  
FAX 318-865-2006

CIRCLE 644 ON READER SERVICE CARD

### DATA Computer Ctr.

Tel: (213) 470-9555 Fax 470-9457  
2253 Westwood Blvd. L.A. CA 90064

Laser Writer SC/NT	2095/3495
NTX/Quime Laser Printer	4795/3295
Mac Plus 1Mb 1Dr.	1245
Mac SE 1Mb 2Dr.	1795

Mac SE/30 1Mb 1Dr.	2750
Mac IICX 1Mb 1Dr.	3295
Mac IICi 1Mb 1Dr.	4395
Mac Portable 40Mb 1Dr.	4795
Image Writer II/LQ	437/985
HP Deskwriter	875
Quantum int. 40/80/100Mb	469/795/895
Rastereops Monitors/Cards; CMS Ext. Hard Drives, Memory Simms in stock. All configs. & same day shipping available.	

CIRCLE 589 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## RENTALS



Mac SE

**PC Computer Rental**

### Also Available:

- Macintosh • IBM PS/2
- Compaq • Laser Printers
- Laptops • Portables

And a host of other peripherals!

*Next Day Delivery  
Anywhere in the U. S. A.*

**Call Toll-Free  
800-765-4727**

CIRCLE 551 ON READER SERVICE CARD

### Data Acquisition

**Data Acquisition & Analysis**  
Complete hardware & software solutions for the scientist & engineer. Acquisition hardware & software, Analysis software, Signal conditioning modules, & Language interfaces. A friendly, knowledgeable technical staff can guide you from start to finish with proven solutions in Industrial, Scientific, Engineering & Laboratory environments. Call or write for a catalog & price list.  
*BIOPAC Systems,  
5960 Mandarin Dr. #D5  
Goleta, CA 93117  
805/967-6615*

### Announcing the **SIMMER**

Adds SIMM sockets and SCSI port to your 128/512 Macintosh

**\$199** (0 Meg)

1M \$249, 2M \$389, 2.5M \$409, 4M \$579

**Dealers Wanted!**

**1 Meg SIMMS \$79** w/Trade

Low profile SOJ 80 Nsec  
Lifetime Guar. Immed. Delivery

**Digi-Graphics**

764 E Village Way  
Kaysville, UT 84037  
(801) 544-2009



CIRCLE 610 ON READER SERVICE CARD

**FREE FREE FREE**

- Need memory for Mac?
- Want to pay the lowest possible price?
- Want superior service and FREE advise?
- Wholesale source!
- Shipping worldwide!
- Int'l FAX (402) 691-8548 (24 hrs/7 days)
- Int'l Direct (402) 691-8248 (24 hrs/7days)
- Free Call! Free Info!

*Mc Donald & Associates  
1-800/338-1531 Voice (U.S.)  
1/800/242-5751 FAX (U.S.)  
Both 24 hrs/7 days*

### Emulators

**II in a Mac**

An Apple IIe computer  
...all in software!

Run Apple II software on your Macintosh.

Convert Apple II files to Macintosh files.

**\$149.95** Add \$3 for P&H

**COMPUTER:applications, Inc.**  
12813 Lindley Drive Raleigh, NC 27614  
(919) 846-1411

CIRCLE 583 ON READER SERVICE CARD

### Memory Upgrade

**SIMM (Memory Modules)**  
Diamond-Pac™, Top Quality American made memory modules offer easy and economical expansion of Mac Plus, SE, II. DRAM by 1,2,4, or 8 megabytes. MC/Visa/Amex. See display ad this issue!  
**AMD**  
*American Micro Distributors Inc.  
16897-D Algonquin  
Huntington Beach, CA 92649  
714/840-5560  
Fax: 714/846-0570*

### UPGRADES!

**512Ke - Plus \$295**  
**512K - Plus \$625**  
**128K - Plus \$695**

**We do new and used equipment/ parts!**

**RAM • Guaranteed Lowest**

**Peripheral Outlet**

314 S. Bdwy • Ada, OK 74820  
**(800) 332-6581**

Visa & MC okay (add 3%)

CIRCLE 687 ON READER SERVICE CARD

**Continued...**

### EXSEL<sup>INC.</sup> DIRECT

**1-800-624-2001**

In NY: 716-272-8770

Mac 512K .....	\$ 545
Mac Plus .....	995
Mac Plus w/20MB Ext. ....	1545
Mac SE .....	1545
Mac SE Dual Floppy .....	1595
Mac SE w/20MB Int. ....	1995
Mac SE w/30MB Int. ....	2095
Mac SE w/40MB Int. ....	2195
Imagewriter I .....	295
Imagewriter II .....	375
Laser Writer .....	CALL
Laser Writer Plus .....	CALL

Custom Configuration Available.  
Call us with your Macintosh needs.

**EXSEL<sup>INC.</sup>**  
THE ALTERNATIVE SOURCE FOR THE FUTURE

2200 Brighton-Henrietta Townline Rd.  
Rochester, NY 14623

All units refurbished with 30-Day Warranty. VISA, MasterCard, prepayment, C.O.D. certified accepted.  
Prices Subject to Change.

CIRCLE 685 ON READER SERVICE CARD

### DISCOUNT MACINTOSH

Mac Plus .....	\$1250
Mac SE 2 drive .....	\$1895
Mac SE 40mb .....	\$2295
Mac Portable 40mb .....	\$4895
Mac SE/30 40/2mb .....	\$3395
Mac SE/30 80/4mb .....	\$3995
Mac IICx 40/2mb .....	\$3795
Mac IICx 80/4mb .....	\$4395
Mac IICi 40/2mb .....	\$4895
Mac IICi 80/4mb .....	\$5495
Apple color monitor .....	\$725
Apple 8 bit video card .....	\$480
Apple keyboard .....	\$100
Apple ext keyboard .....	\$175
Imagewriter II .....	\$450
Laserwriter NT .....	\$3495
Laserwriter NTX .....	\$4795
H.P. Deskwriter .....	\$845

All items new. 90 day warranty  
Most items in stock today.  
Visa and Mastercard add 2%.

### KIWI COMPUTERS

P.O. Box 67381  
Los Angeles CA 90067  
**(213)553-4507**

Fax (213)286-9667  
Mon-Fri 8.30am-4.30pm

CIRCLE 608 ON READER SERVICE CARD

### MAC Systems

Mac SE 2D \$1949 • SE 1D 20 mg.  
\$2349 • SE/30 1 Dr. \$2999 • SE/30 4  
MB 80MB \$4199 • Mac IICx All models  
- Call • Mac IICx - Call • Mac II CI -  
Call • Mac II 13" Monitors \$699 • Mac  
Sync monitor \$549 • Mac Portable -  
Call • Image II \$415 • Laserwriter SC  
\$1919 • Laserwriter NT \$3388 •  
Laserwriter NT \$3388 • Laserwriter  
NJX • \$4699 • HP Scanjet plus & Mac  
Interface \$1399.  
ICC, 818/894-1100,  
FAX 818/891-3285

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





## The Macworld Catalog

**FREE FASTdrive™**

**RAM Disk software with purchase of 4MB or 1MB Mac SIMMs**

**Gives you up to 32MB of Mac Memory!**

- FASTdrive™ delivers the power of System 7 today.
- Run a full 8MB of Operating System Memory and up to 24MB of RAM Disk.
- FASTdrive™ can be set up as the startup application and is 60 to 120 times faster than your hard drive.

**LaserWriter II NTX SIMMs Now Available**

- Add up to 12MB to any LaserWriter II NTX.
- Makes printing faster and does not tie up internal memory.
- Get back to applications sooner.

Available for immediate delivery! Call Our Memory Hotline For Prices and Discounts

**1-800-678-DRAM (678-3726)**

©1990, Newer™ Technology

**Newer™ TECHNOLOGY**

1117 S. Rock Rd., Suite 4  
Phone (316) 685-4904  
FAX (316) 685-9368  
Wichita, KS 67207

In Canada Contact: Tallgrass Technologies, Canada, Inc.  
1775 Meyerside Drive #1 • Mississauga, Ontario L5T 1E2  
(416) 673-3244 • FAX (416) 673-3926

CIRCLE 631 ON READER SERVICE CARD

## MEMORY UPGRADE

### Buy 4 Megabytes Get FullWrite Professional **FREE**

Technology Works and Ashton-Tate have a special 1990 offer. Buy 4 megabytes of memory and get FullWrite Professional FREE. As always, offer includes Technology Works great low price, lifetime warranty and installation kit with every purchase. Call for details:

**(800) 622-2210**

PO FAX#:(512) 794-8520  
Same day shipping

**TechnologyWORKS**

4030 Braker Lane West  
Suite 350  
Austin, Texas 78759

FullWrite offer valid through 3/31/90--or while supplies last.

CIRCLE 690 ON READER SERVICE CARD

### One of the Nation's Fastest Macintosh™ Upgrade/Repair Facilities is Growing!

SIMMONS CONSULTING IS NOW SIMMONS MICROSYSTEMS



**Same Day Turn-Around - Nationwide**  
**30 Minute Turn-Around - Locally**

- New and Used Macintosh Systems Available
- **120 Day Warranty** on New Equipment - **90 Days** on Used!
- Requests for Quotes Via FAX
- Nationwide Leasing Capabilities for Businesses
- Dealer Inquiries Welcome



**SIMMONS  
MICROSYSTEMS**

6417 Market St.  
Upper Darby, PA 19082

**(215) 352-6883 Ext. 30**

FAX # (215) 352-6975

CIRCLE 616 ON READER SERVICE CARD

**Mail order  
can save  
you time—  
and money!**

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





## Below is a list of companies who have advertised SIMMs in past issues of MacWorld Magazine

### January 1988

PSI  
CDC  
DMS

### August 1988

PSI  
Computer Care  
SIMM City  
Palo Alto RAM

### June 1989

PSI  
AMDI  
CDC  
Computer Care  
DMS  
Newer Technology

PSI, a leading manufacturer of Macintosh peripherals since 1987, is always on the cutting edge of technology. We were the first with our 4 meg SIMMs, the first with a RAM upgrade for the Mac Portable, and the first with our Fax/Data modem for the Portable. Other companies may come and go, but PSI is always there, always the innovator, always the leader.

1 meg SIMMs, 4 meg MIMMs, NTX SIMMs, Portable RAM, Fax/Modem

**800-622-1722**

**408-559-8544**

PSI 2005 Hamilton Avenue, Suite 220, San Jose, CA 95125

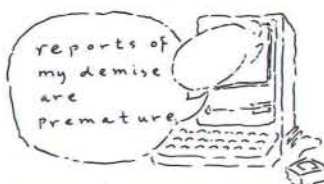
CIRCLE 634 ON READER SERVICE CARD

## Mac Rescue™ for the Classic Mac

Some "experts" are telling us to trash out the 128K and 512K Macs. Don't do it! Classic Macs are far from moribund. Computer Care developed Mac Rescue, a daughter board that snaps on the enhanced Classic Mac motherboard. No need to fold, spindle or mutilate. Installs in minutes to get Mac Plus functionality.

Mac Rescue has 6 SIMM slots so you can upgrade the Classics to 1 meg, 2 megs, 2.5 megs or 4 megs of RAM.

It also has a SCSI port to breathe even more life into your faithful servant.



**Limited time offer:** We'll buy back your old fashioned expansion boards when you order Mac Rescue, call for exact price quote.

Ford Centre, Suite 1180, 420 North Fifth St.  
Minneapolis, MN 55401  
(612) 371-0061 (800) 950-CARE (2273)

**C** Computer  
Care,  
Inc.

Dealer inquiries welcome.  
Visa/MC accepted.

CIRCLE 584 ON READER SERVICE CARD

## Call Up Your Ad On Our Screen.

*The Macworld Catalog*  
**800.888.8622**

**Continued...**

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

- 80 & 70 ns Speed
- Low Profile, Surface Mount
- High Quality 4-Layer Board
- Lifetime Warranty
- Visa, MC, No Surcharge
- Same Day Shipping

1MB & 4MB SIMMs for all models:

## \$Lowest

Parity SIMMs available LaserWriter II NTX SIMMs in stock

### SOUTH COAST ELECTRONICS

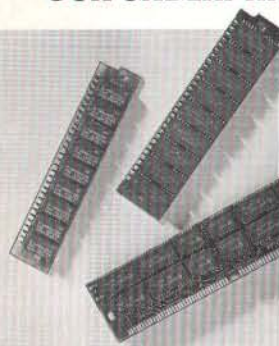
10920 Wilshire Blvd. Suite 1100  
Los Angeles, CA 90024

213-208-3260 Fax 213-208-3282

**800-289-8801**

CIRCLE 654 ON READER SERVICE CARD

**DEPEND ON  
OUR SIMMs.**  
**DEPEND ON  
OUR UNDERPRICES.**



**NECS**  
NEW ENGLAND  
CIRCUIT SALES, INC.

292 Cabot Street, Beverly, MA 01915  
Telephone: 508-927-8250 Telex: 882-685-NECS UD. Telefax: 508-922-1341

- Our SIMM prices absolutely can't be beat, we buy in quantity, and pass the savings on to you.
- Lifetime overnight replacement warranty, we'll replace any NECS SIMM for any reason within 24 hours of your phone call.
- Every order shipped directly from stock—no backorders.

With over ten years of industry experience, NECS is one of the most advanced and dependable semiconductor distributors in the world. Building from this technical expertise, our Memory Division now offers SIMMs at unbelievable prices for all your MAC expansion needs. Let us prove that our prices—and quality—can't be beat. Call now for immediate cross-referencing and delivery.

**Call and ask for our Memory Division at 1-800-922-NECS.**

CIRCLE 562 ON READER SERVICE CARD

**Call Up  
Your Ad  
On Our  
Screen.**

The Macworld Catalog

**800.888.8622**

## Peripherals

### REMOVABLE HARD DISK STORAGE

#### FOR THE MACINTOSH

#### HARD DISK CARTRIDGE SYSTEMS

- Random
- Unlimited Capacities
- 20MB to 50MB Capacities Available
- Proven Winchester Technology
- Maximum Data Security
- Image Back-up
- 100% Media Interchangeability
- 24 Month Warranty

Model 181ES Removable Hard Disk System \$1345.00  
See your local Macintosh dealer or call 1-805-694-0733

DMA Technologies, Inc.  
601 Pine Ave., Goleta, CA 93117  
Call 805-964-0733 for Information  
Fax Inquiries: 805-964-0734

CIRCLE 580 ON READER SERVICE CARD

## 9-Track Tape Subsystem For the Macintosh™



Exchange data files between your Macintosh and any mainframe or mini-computer using IBM compatible 1600 or 6250 BPI 9-track tape.

Unit can also be used for disk backup. Transfer rate is up to 1 megabyte per minute via your SCSI interface. Subsystem includes, tape drive, software, and complete documentation. For more information, call us today!

**QUALSTAR®**

9621 Irondale Avenue  
Chatsworth, CA 91311  
Telephone: (818) 882-5822

Macintosh is a trademark of Apple Computer, Inc.

CIRCLE 668 ON READER SERVICE CARD

## Printers

### Apple Daisywheel Printer

TRUE letter quality on all Mac's & Apple II's. Fast 40 char./sec. on 1-pg./6-part forms, fixed or proportion font, 198 columns, bold. NEW \$449, RECOND. \$349 incl. easy mac point-&-click printer resource, I/F cable, ribbon, & \$10 print wheel w/dual font, math, legal, foreign symbols. New sheetfeeder \$49. Commercial quality w/ 90-day guarantee.

Quality Discount Computers Inc.  
135 Artist View Dr.

Wellington, NV 89444

702/465-2473, 415/487-8148

## Scanners

### SHARP IS COLOR - AIP SPECIALS

#### COLOR SCANNERS/ LAPTOPS & MORE FOR IBM & MAC

JX-100-8 Bit Hand Color Scanner.....	\$ 995.....	NOW \$ CALL
JX-300-Business Color Scanner.....	\$ 3995.....	NOW \$ CALL
JX-450-Professional Color Scanner...	\$ 6995.....	NOW \$ CALL
JX-600-Commercial Color Scanner.....	\$ 14995.....	NOW \$ CALL
GP1B-Interface Package W/Cable.....	\$ 570.....	NOW \$ 448
JX-730-Color Ink Jet Printer.....	\$ 2195.....	NOW \$ 1485
JX-9500-SHARP Laser Printer.....	\$ 1695.....	NOW \$ 1085

**AIP**

'BUY' CALL US - LET'S MAKE A DEAL 'LEASE'

TEL: (818) 882-7034 FAX: (818) 341-3017

CIRCLE 645 ON READER SERVICE CARD

For your ad to appear on The Macworld Catalog screen, call 800/888-8622.



# The Macworld Catalog



Software

Bar Code

## PrintBar Fonts for Macintosh

UPC-A, UPC-E, EAN PostScript® fonts for LaserWriters and high-resolution printers such as the L-300. Code 39 and I 2 of 5 for ImageWriters and LaserWriters.

Use PrintBar with database managers, label, DTP and drawing programs. Print bar codes as easily as printing text.

Complete Line of Mac-Compatible Bar Code Readers.

FREE BROCHURES CALL (916) 622-4640 • FAX (916) 622-4775

### BearRock

6069 Enterprise Drive • Diamond Springs, CA 95619

CIRCLE 567 ON READER SERVICE CARD

## Bar Code Fonts



Business

## Filemaker Templates

For small business and personal use.

Modules available for:

- Service Business
- Construction Industry
- Professionals
- Personal Finance

One-write checking, GL, A/R, A/P, master mail, labels, job costing, PO's, invoices, statements, reports, more!

Integrated. Comprehensive! Easy setup/full support! \$149. Visa/MC, info call:

*Fine Line*

459 Liberty Square Rd.

Boxboro, MA 01719

508/263-4322

1-800/955-4320

## Mail Order Manager

SuperMOM—a complete database solution for catalog mail order businesses. Easy order entry • unlimited ship-to addresses • Inventory with multiple pricing • A/R • UPS • Credits & returns • Customer tracking by Group, Market, Promo & Salesman • Thorough reporting on sales, inquiries, & advertising response • Demo \$15  
National Tele-Press  
P.O. Box 79  
Mendocino, CA 95460  
707/927-2848, 800/448-0988

## LOANS & LEASES

Making Attorneys, Accountants, Bankers, Real Estate and Financial Professionals more profitable! Over 11,300 Users!  
**Amortization** Any Loan, Balloons, Variable rates and payments, Biweeklys, Extra and Skipped Payments, APRs, Points & Fees, 360/365 Days, Exact-day interest, negative amortization, Solve For Unknown Variable. Create your own Custom Reports.  
**Accounting** Tracks loan & rental payments and late penalties for entire portfolios or single accounts. Record payments as they are made. Summary reports of Portfolio activity and daily entries. Delinquency reports.  
**Comparison** Compare and analyze 5 types of loans at once. Choose from several comparison reports. For new loans or refinancing.

**Customization Available**

Call or write for  
**FREE** Sample Reports & Brochures and  
**FREE** Desk Accessory Offer  
**Softflair** • 8753 Parkview • Milwaukee, WI 53226 (414) 797-4490  
Add \$5 S/H MC/VISA

CIRCLE 649 ON READER SERVICE CARD

## 100 Templates for Excel

Save time and money with Templicity™ — spreadsheet templates for home and small business. Includes ready-made worksheets for personal financial planning, budgets, home office, real estate, 1989 taxes, bookkeeping, and many other unique applications. Satisfaction guaranteed. All 100 templates - \$34.95.  
*The Sterling Connection*  
Box 4850, Dept. N  
Berkeley, CA 94704  
415/655-2355

## Instant BusinessTools

**BizPlanBuilder™ 4.0** Intuitive & logical business & marketing plan template on diskette for raising capital, launching new products or services. 90+ pages of outlines, headlines, written texts & ideas... formatted into 33 MacWrite/MSWord files. Sales & marketing oriented—follow tutorials, fill-in-the-blanks, edit into a finished plan. Linked financials in Excel (SYLK). Proven successful. \$99+shpg

\*We applied for a loan in early November and by Christmas we had \$4,200,000.\*

\*My CPA highly recommends it.\*

Companion software packages:

- Employee Policies Handbook \$99
  - Sales Quota/East Mgmt mgrs+reps \$149
  - Production Financial Model \$149
  - Private Stock Offering raise up to \$1Mil \$149
  - Limited Partnership Agreement \$149
  - DealMaker™ Business Valuation \$395
- +shipping  
800/442-7373  
415/941-9191 CA Visa-MC-Ax  
Leverage time & technology—save \$

CIRCLE 663 ON READER SERVICE CARD

## CAD/CAM

### Professional CAD Symbol Library

Over 2,700 CAD Symbols in One All-Inclusive Package



Architectural (Residential & Commercial), Interior Design & Site Planning, The "Plumbing & Heating Supply House", The "Hardware Store", The "Electronics Shack", Welding, General Drawing Aids, Cartographic, 180+ Page User's Manual, And Much More, All for \$119.95!

**Advanced System Design, Inc.** Compatible with  
1010 Stagecoach Blvd., P.O. Box 3131  
Evergreen, Colorado 80439  
(303) 674-2222 to Order (Specify ClientCAD or MacDraw II Version)

CIRCLE 643 ON READER SERVICE CARD

## Clip Art

**FREE!!!**  
CIRCLE THIS AD NO. AND GET A  
FREE MAXXI FOLDER ABOUT OUR  
CARTOONS. FREE HOW-TO DISK  
ON PAGE/TYPE DESIGN INCLUDED  
WITH EACH ORDER.

**MAXXI**  
PO BOX 31165,  
SEATTLE WA 98103-1165  
1-800-842-9327

CIRCLE 621 ON READER SERVICE CARD



## Military Art

NEW! Defense graphics library designed for military and industry professionals. Call for FREE brochure. V/MC/PO's COD. PAINT • HYPERCARD • PICT • EPSF

817-737-7941

NOVA Cube 1704 Tremont Ft Worth TX 76107

CIRCLE 650 ON READER SERVICE CARD

## Clip Art Maps!

- Paint
- Draw
- EPSF



From \$79

World, Continents, USA & states by county! Ideal for publications and presentations. For FREE brochure please call or write:

800-334-4291

MicroMaps Software, Inc., Box 757, Lambertville, NJ 08530

CIRCLE 625 ON READER SERVICE CARD

## Communications

## Burroughs emulation

Contact™ emulates TD/MT/ET and T27 terminals. Sophisticated data capture — all screen data can be used by spreadsheet, database or word processor... CANDE file transfer, fully à la Mac interface, soft keys, multiple pages & addresses, password protection... Soon: advanced file transfer

Avenue Software Inc.  
1173 W. Charest Blvd. #390, Québec, Qc  
Canada, G1N 2C9 — Tel. (418) 682-3088

CIRCLE 564 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## Desktop Publishing

### Avenir™ Lino & Color PS!

- Lino output to paper/film
- Color PostScript® output
- Mac, DOS or PostScript®
- Canon 4-color laser copies
- 24-hr access via modem
- Credit cards welcome

Low prices & great service! Call today for an info packet.

Avenir™ Corporation

3141 Federal Blvd.

Denver, CO 80211

303/433-8000, 800/AVENIR-IT

800-283-6474

## Questions?

### Desktop Publishing? Graphics? Arts?

Call us. We'll send you a newsletter and catalog. For the best prices around and real support on word processing, page layout and graphics programs. "I'm glad I called"

1-800-MAC-BEAT!



Mac BEAT™

CIRCLE 648 ON READER SERVICE CARD

## Educational

### Algebra 1 Homework Tutor™

Turns your Mac into a private tutor that actually helps you do your Algebra homework. Checks each step, gives hints, create unlimited practice problems. Solves & explains examples while you watch. Full Mac interface plus "smart" math editor that's easier than pencil & paper. \$119.95 chk/MO or call for free brochure.

Missing Link Software

P.O. Box 3280

South Amboy, NJ 08879

800/222-9296

## Courseware for Learning Grammar / Composition

Nuts & HyperBolts...Remedial grammar tutorial, 5 disk multi-stack set with drills \$189.95. Runs on MacPlus & up and also networks. For high school and college students.

SwiftNotes...Do your compositions note cards, sort by key words, paste in your word processor, also two styles bibliography references \$44.95. Both need 1 Meg Ram & HyperCard.

Sterling Swift Software, P.O. Box 43325, Austin, TX 78745-0009, 512-280-2431

CIRCLE 600 ON READER SERVICE CARD

## TEST GENERATION & SCORING!

LXR-TEST™ 4.0 is the most advanced testing system available. Full character styling (tabs, leading), exact graphic placement, database selection, scoring, mastery reporting, item analysis, and much more! Certified question banks available from major exam publishers.

For free presentation disk, call, write, or fax:

Logic eXtension Resources

9651-C Business Center Drive

Rancho Cucamonga, CA 91730

(714) 980-0046 Fax: (714) 987-8706

CIRCLE 614 ON READER SERVICE CARD

## Free MakeTest Demo Disk

New, easy-to-use software stores questions and print tests easily in any format. Has features teachers most want at an affordable price. Only \$149, 30-day money-back guarantee. To order MakeTest or demo disk, call 800-669-6574 or 415-665-5302.



MOUNTAIN LAKE  
SOFTWARE, INC.

258-B Laguna Honda Blvd.  
San Francisco, CA 94116-1409

CIRCLE 627 ON READER SERVICE CARD

### Teacher's Rollbook

A complete classroom management tool! Grade averaging and reporting. New quick grade entry • Full attendance records and totals • Records disciplinary actions • Class size reports • Up to 315 students per file • Remember birthdays & checked out items • Letters to parents • Min. req. Mac 512KE, 2 drives • \$99 • Demo \$10.

Current Class Productions

22824 Berendo Ave.

Torrance, CA 90502

213/326-4246

## An all new edition of the Macintosh Educational Software Collection

- Hard-to-Find & Best Sellers
  - HyperCard / Shareware
  - Over 150 Titles
  - All Subject Areas
  - Teachers, Students, Parents
- Send for Free Catalog!**

CHARIOT • 3659 India St. • San Diego, CA 92103 (619) 298-0202

CIRCLE 575 ON READER SERVICE CARD

The most readers. The least cost. Immediate access. Just call *The Macworld Catalog* at 800.888.8622 and place your ad—today!

# 800.888.8622

## Reference Manager

Find your references, notes, ideas, when you need them—organize by topic—search by keyword/topic/key fields (output to screen, printer, file [WP compt.])—file import/export—Bibliographic output flexible format—cross reference—bookmark facility—save time—HyperCard incl.—Personal Reference Catalog V2.0—\$79 + \$3 s/h, edu. disc. avail.

Delphinus Inc.,

POB 458

Groton MA 01450

508/448-2836

## Engineering

## CIVIL, STRUCTURAL SURVEYING, DEED PLOTTING

### LANDesign™

#### COGO/Surveying

- Graphics always visible
- Import/export data
- Deed plot, map check
- Radial stakeout
- Intersections
- Traverse adjustments
- US\$595 plus shipping

One-month money-back guarantee. Free support.

#### Other programs available for:

- Deed plotting
- Road design
- Contour mapping
- Terrain modelling
- Earthwork calculations
- Estimating
- Detention pond design
- Digitizer input
- Structural design of steel, wood, concrete
- Beam sizing
- Structural properties
- Section tables AISC, CISC
- Aggregate blending
- Unit conversions
- Plotting

For free catalog or info, call or write:  
**COMPUengineering (416) 738-4601**

113 McCabe Crescent  
Thornhill, Ontario L4J 2S6  
CANADA

CIRCLE 581 ON READER SERVICE CARD

### Schematic Entry/Digital Simulation

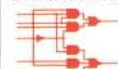
## DesignWorks™

Fully integrated and fully functional schematic and simulation on the Macintosh, featuring:

- fully interactive digital simulation with logic-analyzer style timing display
- fully compatible with Douglas CAD/CAM™ PCB layout
- full 7400, 4000, LSI, analog libraries
- full high level language PLD support when used with LPLC logic compiler
- dot-matrix, laser, pen plotter output
- user-definable device symbols with full simulation

DesignWorks: \$685 LPLC: \$535

Low-cost educational versions also available



Capilano Computing  
545-108th NE, Suite 6  
Bellevue WA 98004  
(604) 669-6343

CIRCLE 573 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## E(E)PROM, MICRO & MEMORY CARD PROGRAMMERS WITH INTEGRATED MAC USER INTERFACE



\$345 - 595

- Connects to modem port. Pull-down commands menus.
- No personality modules for E(E)PROMs & Intel Micros.
- All 24/28/32 pin E(P)ROMs to 1 MBit (upgradeable to 32 Mb).
- 8741, -2, -4, -8, -16, -32, -64, -128, -256, -512, -1024, -2048, -4096, -8192, -16384, -32768, -65536, -131072, -262144, -524288, -1048576, -2097152, -4194304, -8388608, -16777216, -33554432, -67108864, -134217728, -268435456, -536870912, -1073741824, -2147483648, -4294967296, -8589934592, -17179869184, -34359738368, -68719476736, -137438953472, -274877906944, -549755813888, -1099511627776, -2199023255552, -4398046511104, -8796093022208, -17592186044416, -35184372088832, -70368744177664, -140737488355328, -281474976710656, -562949953421312, -1125899906842624, -2251799813685248, -4503599627370496, -9007199254740992, -18014398509481984, -36028797018963968, -72057594037927936, -144115188075855872, -288230376151711744, -576460752303423488, -1152921504606846976, -2305843009213693952, -4611686018427387904, -9223372036854775808, -18446744073709551616, -36893488147419103232, -73786976294838206464, -1475739525896764128, -2951479051793528256, -5902958103587056512, -11805916207174113024, -23611832414348226048, -47223664828696452096, -94447329657392904192, -188894659314785808384, -377789318629571616768, -755578637259143233536, -1511157274518286467072, -3022314549036572934144, -6044629098073145868288, -12089258196146291736576, -24178516392292583473152, -48357032784585166946304, -96714065569170333892608, -193428131138340667785216, -386856262276681335570432, -773712524553362671140864, -1547425049106725342281728, -3094850098213450684563456, -6189700196426901369126912, -12379400392853802738253824, -24758800785707605476507648, -49517601571415210953015296, -99035203142830421906030592, -198070406285660843812061184, -396140812571321687624122368, -792281625142643375248244736, -1584563250285286750496489472, -3169126500570573500992978944, -6338253001141147001985957888, -12676506002282294003971915776, -25353012004564588007943831552, -50706024009129176015887663104, -101412048018258352031775326208, -202824096036516704063550652416, -405648192073033408127101304832, -811296384146066816254202609664, -1622592768292133632508405219328, -3245185536584267265016810438656, -6490371073168534530033620877312, -12980742146337069060067241754624, -25961484292674138120134483509248, -51922968585348276240268967018496, -103845937170696552480537934036992, -207691874341393104961075868073984, -415383748682786209922151736147968, -830767497365572419844303472295936, -1661534994731144839688606945591872, -3323069989462289679377213891183744, -6646139978924579358754427782367488, -13292279957849158717508855564734976, -26584559915698317435017711129469952, -53169119831396634870035422258939904, -106338239662793269740070844517879808, -212676479325586539480141689035759616, -425352958651173078960283378071519232, -850705917302346157920566756143038464, -1701411834604692315841133512286076928, -3402823669209384631682267024572153856, -6805647338418769263364534049144307712, -13611294676837538526729068098288615424, -27222589353675077053458136196577230848, -54445178707350154106916272393154461696, -108890357414700308213832544786308923392, -21778071482940061642766508957261784672, -43556142965880123285533017914523569344, -87112285931760246571066035829047138688, -174224571863520493142132071658094277376, -348449143727040986284264143316188554752, -696898287454081972568528286632377109504, -1393796574908163945137056573264754219008, -2787593149816327890274113146529508438016, -557518629963265578054822629305901687632, -1115037259926531156109645358611803375264, -2230074519853062312219290717223606750528, -4460149039706124624438581434447213501056, -8920298079412249248877162868894427002112, -17840596158824498497754325737788854004224, -35681192317648996995508651475577708008448, -71362384635297993991017302951155416016896, -142724769270595987982034605902310832033792, -285449538541191975964069211804621664067536, -570899077082383951928138423609243328135072, -1141798154164767903856276847218486656270144, -2283596308329535807712553694436973312540288, -4567192616659071615425107388873946625080576, -9134385233318143230850214777747893250161152, -18268770466636286461700429555495786500322304, -36537540933272572923400859110991573000644608, -7307508186654514584680171822198314600128912, -14615016373309029169360343644396629200257824, -29230032746618058338720687288793258400515648, -58460065493236116677441374577586516801031296, -116920130986472233354882749155173033602062592, -233840261972944466709765498310346067204125184, -467680523945888933419530996620692134408250368, -935361047891777866839061993241384268816500736, -1870722095783555733678123986482768537633001536, -3741444191567111467356247972965537075266003072, -7482888383134222934712495945931074150532006144, -14965776766268445869424991891862148301064012288, -29931553532536891738849983783724296602128054576, -59863107065073783477699967567448593204256109152, -119726214130147566955399935134897186408512218304, -239452428260295133910799870269794372817024436608, -478904856520590267821599740539588745634048873216, -957809713041180535643199481079177491268097746432, -1915619426082361071286398962158354982536195492864, -3831238852164722142572797924316709965072390985728, -7662477704329444285145595848633419930144781971456, -15324955408658888570291191697266839860289763942912, -30649910817317777140582383394533679720579527885824, -61299821634635554281164766789067359441159057771648, -122599643269271108562329533578134718882318115543296, -245199286538542217124659067156269437764636231086592, -490398573077084434249318134312538875529272462173184, -980797146154168868498636268625077751058544924346368, -1961594292308337736997272537250155502117089848692736, -3923188584616675473994545074500311004234179697385472, -7846377169233350947989090149000622008468359394770944, -15692754338466701895978180298001244016936718789541888, -31385508676933403791956360596002488033873437579083776, -62771017353866807583912721192004976067746875158167552, -125542034707733615167825442384009952135493750316335104, -251084069415467230335650884768019904270987500632670208, -502168138830934460671301769536039808541975001265340416, -1004336277661868921342603539072079617083950002530680832, -2008672555323737842685207078144159234167900005061361664, -40173451106474756853704141562883184683358000101227328, -80346902212949513707408283125766369366716000202454656, -160693804425899027414816566251532738733432000404911312, -321387608851798054829633132503065477466864000809822624, -642775217703596109659266265006130954933728001619645248, -1285550435407192219318532530012261909867456003239290496, -2571100870814384438637065060024523819734912006478580992, -5142201741628768877274130120049076639469824012957161984, -1028440348325753775454826024009815327893968002591433376, -2056880696651507550909652048019626655787936005182866752, -4113761393303015101819304096039253311575872010365733504, -8227522786606030203638608192078506623151744020731467008, -16455045573212060407277216384157013246303488041462934016, -32910091146424120814554432768314026492606976082925868032, -65820182292848241629108865536628052985213952165851736064, -131640364585696483258217731073256105970427904331703472128, -263280729171392966516435462146512211940855808663406844256, -5265614583427859330328709242930244238817116173268137088, -10531229166857718660657418485860488477634232346536274176, -21062458333715437321314836971720976955268464693072548352, -42124916667430874642629673943441953910536929386145096704, -84249833334861749285259347886883907821073858772290193408, -168499666669723498570518695773767815642147717544580386816, -336999333339446997141037391547535631284295435089160773632, -673998666678893994282074783095071265688590870178321547264, -1347997333357787988564149566190142531377181740356643094528, -2695994666715575977128299132380285062754363480713286189056, -5391989333431151954256598264760570125508726961426572378112, -10783978666862303908513196529521140251017453922853144756224, -21567957333724607817026393059042280502034907845706289512448, -43135914667449215634052786118084561004069815691412579024896, -86271829334898431268105572236169122008139631382825158049792, -172543658669796862536211144472338244016279262765650316099584, -345087317339593725072422288944676488032558525531300632191072, -690174634679187450144844577889352976065117051062601264382144, -1380349269358374900289689155778705952130234102125202528764288, -2760698538716749800579378311557411904260468204250405057528576, -5521397077433499601158756623114823808520936408500810115157152, -1104279415486699920231751324622963701704187281700160223031424, -2208558830973399840463502649245927403408374563400320446062848, -4417117661946799680927005298491854806816749126800640892125696, -8834235323893599361854010596983709613633498253601281784251392, -17668470647787198723708021193967419227266996507202563568502784, -35336941295574397447416042387934838454533993014405127137005568, -70673882591148794894832084775869676909067986028810254274011136, -141347765182297589789664169551739353818135972057620508548022272, -282695530364595179579328339103478707636271944115241017096044544, -565391060729190359158656678206957415272543888230482034192089088, -1130782121458380718317313356413914830545087776460964068384178176, -2261564242916761436634626712827829661090175552921928136768356352, -4523128485833522873269253425655659322180351105843856273536712704, -9046256971667045746538506851311318644360702211687712547073425408, -18092513943334091493077013702622637288721404423375425094146850816, -36185027886668182986154027405245274577442808846750850188293701632, -72370055773336365972308054810490549154885617693501700376587403264, -144740111546672731944616109620981098309771235187003400753174806528, -28948022309334546388923221924196219661954247037400680150634961312, -57896044618669092777846443848392439323908494074801360301269922624, -115792089237338185555692887696784878647816988149602720602539845248, -231584178474676371111385775393569757295633976299205441205079690496, -463168356949352742222771550787139514591267952598410882410159380992, -926336713898705484445543101574279031182535905196821764220318761984, -1852673427797410968891086203148558062365071810393643528440637523968, -3705346855594821937782172406297116124730143620787287056881275047936, -7410693711189643875564344812594232249460287241574574113762550095872, -14821387422379287751128689625188464498920574483149148227525100191744, -29642774844758575502257379250377289977841148966298296550500200383488, -59285549689517151004514758500754579955682297932596593101000400766976, -118571099379034302009029517001509159111364595865193186202000801533952, -237142198758068604018059034003018318222729191730386372404001603067904, -474284397516137208036118068006036636445458383460772744808003206135808, -948568795032274416072236136012073272890916766921545489616006412271616, -1897137590064548832144472272024146545781833733843090979232012824543232, -3794275180129097664288944544048293091563667467686181958664025649086464, -7588550360258195328577889088096586183127334935372363917328051298172928, -15177100720516390657155778176191752366254669870744727834656102596345856, -30354201441032781314311556352383504732509339741489455669312205192691712, -60708402882065562628623112704767009465018679482978911338624410385383424, -121416805764131125257246225409534018930037358965957822677248820770766848, -24283361152826225051449245081906803786007471793191564535449764154153376, -48566722305652450102898490163813607572014943586383129070899528308306752, -97133444611304900205796980327627215144029887172766258141799056616613504, -194266889222609800411593960655254430288059774345532516283598113233227008, -388533778445219600823187921310508860576119548691065032567196226466454016, -777067556890439201646375842621017721152239097382130065134392452932908032, -1554135113780878403292751685242034422304480194764260130268784905865816064, -3108270227561756806585503370484068844608960389528520260537569811731632128, -6216540455123513613171006740968137689217920779057040521075139623463264256, -12433080910247027226342013481936275378435841558114081042150279246926528512, -24866161820494054452684026963872550756871683116224082084300558493853057024, -49732323640988108905368053927745101513743366232448164168601116987706114048, -99464647281976217810736107855490203027486732644896328337202233975412228096, -198929294563952435621472215710980406054973465289792656674404467950824456192, -3978585891279048712429444





# The Macworld Catalog



**\$49**  
2 disks

## BirdSongs!

Enhance your Macintosh workstation with the sounds of real birds that sing in the background. These professionally digitized bird-songs are played at random or by menu selection, and do not interfere with the foreground application. Forty songs are included in this two-disk set. A hard disk drive is required.

Dial 505-897-4024 Visa-MC

**Corrales Software**

POB 2730 Corrales NM 87048

CIRCLE 691 ON READER SERVICE CARD

## Fonts

## PostScript® Font Software

SAVE UP TO 35%

Off List Price

Authorized Dealer For:  
Adobe Image Club  
Bitstream Linotype  
Casady & Greene Monotype

**1-800-248-FONT**

PRECISION TYPE 516-348-6777  
595 OLD WILLETTS PATH, HAUPPAUGE, N.Y. 11788  
\*PostScript is a registered trademark of Adobe Systems Inc.

CIRCLE 609 ON READER SERVICE CARD

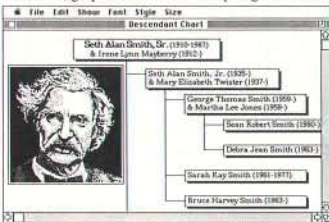
**Your Ad  
Gets More  
For Less.**

**800.888.8622**

## Genealogy

### REUNION™ the family tree software

Reunion quickly records and displays family information and images. Click to navigate through generations of ancestors. Create large, COLOR, graphic descendant and pedigree charts.



Family groups • histories • mail lists • calendars • user-defined fields • mail merge • GEDCOM. \$129 plus \$4 s&h. Visa/MC welcome. Call or write for a free brochure and sample printouts.

**LEISTER PRODUCTIONS**  
14 Hill Blvd., Mechanicsburg, PA 17055  
717-697-1378

CIRCLE 613 ON READER SERVICE CARD

### MacGene™

"Genealogy Research Made Easy"  
Automate your family album with treecharts, statistics, histogram, folklore...Define your own fields, searches, reports, mailer, etc. Features: Auto link/generation, external files, Publish Ready, plus more... the FASTEST...

- NOT HyperCard • NOT IBM Port
- \$145 Visa/MBG • Demo \$25

Applied Ideas Inc.

P.O.Box 3225

Manhattan Beach, CA 90266

Order/Free Info: 213/545-2996

### Family Heritage File™

Most powerful genealogy program on Mac. Rated "BEST" by Macworld. Designed by genealogy professionals (LDS Church)

- Enhanced • Fully relational • Graphic Pedigree, Family Group, Individual, Marriage, Surname • Unlimited History
  - Sorted Lists • Export to WP/data base/modem. \$149 + \$5 s/h. Demo \$7. Visa/MC. Free Lit Pak.
- Star.Com Software,  
Windsor Park East  
25 West 1480 North  
Orem, UT 84057  
801/225-1480

### Family Roots™

Do it YOUR way! Huge variety and capacity for your family history. Make pedigree charts, descendants charts, person sheets, group sheets, indices and much more. Customize to your own preferences. Standard Mac interface Call for FREE information.

Satisfaction guaranteed MC/Visa/AE.

Quincept

Box 216

Lexington MA 02173

617/641-2930, 800/637-ROOT

## Health

### Analyze Diets, Menus...

so much more with the FOOD PROCESSOR III! This TOP-rated software has the best database of any system on the market today! Used by USDA, schools, colleges, hospitals, fitness centers & health programs. •2400-3000 foods - 30 nutrients. \$295 •CALL OR WRITE TODAY FOR FREE DEMO DISK!

ESHA Research

P.O. Box 13028, Dept. D

Salem, OR 97309

503/585-6242

## HyperCard Stacks

## You can learn French, German, Russian, Spanish or Latin the efficient way with MacFlash Cards!

Powerful, yet easy to use. Over 2000 words & 1000 synonyms. Learn vocabulary fast! Can be used as a "point and click" dictionary. Use "Look Up" to find just the right word. 43 pg manual. German I/II, French I/II, Russian I, Spanish I, Latin I: \$25 each. S&H \$3, CA Res add 7% tax. Money-back guarantee. Call or send for additional information. Order today by calling 1-800-283-4080 X850

The Language Quest Software Company Same Day Shipping  
101 First Street, Suite 428, Los Altos, CA 94022 Quality product: low price

CIRCLE 683 ON READER SERVICE CARD

### Dialoger™ for HyperCard®

Dialoger is a complete environment for the design, creation and control of any kind of dialog window - entirely within HyperCard. Create dialogs in just minutes - without writing a line of script. Dialoger was created with both the "novice" and "power user" in mind. Using color, lists, popups and its interactive control, you can break through HyperCard's limits. \$94.29 theResult Software, Inc.  
111 Providence Road  
Chapel Hill, NC 27514  
919/493-7250

## ГиперКарта от ГиперГлота

OUR NEW KANJIMASTER  
ON 12 DISKS WITH EXTENSIVE SOUND, \$149.00

COMPLETE SPANISH  
COURSE WITH EXTENSIVE  
SOUND, 149.00

Products in Russian, French, & German, too!

Call or write for our free catalog today!

The HyperGlot Software Company, Dept MW

505 Forest Hills Blvd. Knoxville, TN 37919

(800)726-5087

CIRCLE 602 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## ADD SPREADSHEET CAPABILITY TO STACKS

A		B		C	
Ship To:		Invoice#		1001	
1119 West Place		Date:		2/10/89	
Huntington, CT 06484		Customer#		101A	
City, State, Zip					
Item	P/N	Description	Qty	Unit Price	Total
1	THW001	Trendware HyperTools™ #1	5	99.95	499.75
2	THW002	Trendware HyperTools™ #2	3	99.99	299.97
3	THW004	Trendware Stack Cleaner™	12	49.90	598.80
Subtotal					1398.52
Tax: 11.3					1409.82
Shipping: \$5.00					1414.82
Total					1414.82

**Trendware XCAL™** allows you to integrate calculations into new or existing stacks. Initiated from HyperCard's standard menu, XCAL displays a spreadsheet-like grid over cards in your stack. Clicking over HyperCard items in the grid window lets you create formulas for fields & buttons similar to those available with most stand-alone spreadsheet programs. Over 100 functions built-in!

Performs calculations automatically on numerical data, text and dates when data is entered or an item is clicked. Apply numeric, text and date formats to fields. Fields are reformatted automatically when data is entered! Calculations can be performed on groups of cards and subsets that match a search criterion. Use the built-in macro editor for advanced capabilities. \$149.95

**HyperTools™ #1** Icon Editor, Alignment & Array Creation Tools, Script Analysis Tools, use the Font Tools on groups of fields & buttons, Checkbox Tools, XCMD tools, Button Tools & more. \$99.95

**HyperTools™ #2** Add Multiple Choice Lists to Fields, Field Sorting, Data Formatting & Validation, Sound Tools, Group Tools for moving & copying groups of objects, Card Reordering & more. \$99.95

**Stack Cleaner™** Add menus to stacks with the Menu Editor. Plus utilities to merge, split, clone and reduce the size of scripts. Plus ResCopy from Apple. Now includes utility to compact all stacks on your disk. \$49.95

**HyperTools:** "The tools and utilities in these two packages (16 in each program) are powerful, and they can definitely help stack authors take fuller advantage of HyperCard's potential." - MacWorld, Dec 88

**Trendware Corporation** PO Box 2285 Huntington, CT 06484 (203)926-1116

CIRCLE 667 ON READER SERVICE CARD

## Languages

### MACTRAN PLUS

This versatile Integrated Made-for Mac Development System - Includes: Editor, Optimizing, Compiler, Source Level Debugger, Linker, Library Manager - Supports: 68020/68882 in-line code generation. Significant VAX FORTRAN & ANSI 8X extensions. Comprehensive MAC Tool Box Interface. Unlimited code segment size.

**DCM DATA Products**  
610 One Tandy Center  
Fort Worth, TX 76102  
817/870-2202

### Fortran on Your Desktop

No need to wait for time on the "big" computer any longer. Language Systems Fortran lets you run the same high performance Fortran programs at your desk. VAX-compatible extensions, high precision IEEE floating point data types, complete access to Toolbox, direct code generation for the Mac II, and the MPW programming environment make this compiler the most powerful Fortran for the Mac.  
**Language Systems Corp.**  
441 Carlisle Drive  
Herndon, VA 22070  
703/478-0181

## Lottery

**\$115.5 Million Dollar Jackpot was CRACKED!!**  
**Using Odds Improvement Multiplication™**  
**U.S. Patent Number #4,712,796**  
**And now... You can control this Multi-Million Dollar Mac Lottery winning system on your Macintosh!**

**Harvard University Consultant confirms that the MacLotto™ process dramatically improves your odds of winning each and every time you use the system!**

**Lottery Shocker!!!**  
"It is possible to improve your odds 2,200 times over random selection of winning MILLIONS OF DOLLARS MORE each and every time you apply the MacLotto™ system!"

**Penna. Doctor Wins \$8,200,000.00 Million Dollars!**  
"My wife and I shared the jackpot...Odds Improvement Multiplication™ gave me 12 prize wins. The Jackpot, three 2nd prizes & 8 third prizes....I'm willing to inform you that this [system] really works!" - Dr. JW Jr. of Pa.

**MacLotto™** - A highly interactive program which works with every possible lottery configuration. Now and in the future. An advanced graphical interface makes it fast and easy to compute, place and verify your bets!

\$99 Complete! MC & Visa call our toll FREE number! No COD sorry. U.S. Math Labs  
FAX your order! 508 - 653 - 9193 18 Main Street  
Concord Ma. 01742

**1 - 800 - PLAY - SIX**

CIRCLE 628 ON READER SERVICE CARD

## Medical

**CMAMedical™**  
**CMADental™**

CMA Micro Computer  
55888 Yucca Trail, Suite 5  
Yucca Valley, CA 92284

**Quality, Speed & Versatility**

**Compare these Features:**

Paper Claims	Appointments with Recall	Multi User
Electronic Claim Files	Management Reports	Multi Tasking
SuperBill	Production Analysis	Networks:
Patient Ledgers	Responsible Party Billing	AppleShare,
Financial Histories	Audit & Backup	Novell, TOPS,
Diagnostic Data Base	Patient Labels	MacServe
		File Interchange with other Data Programs

Solo and multipractitioner office management systems for the Macintosh.

**Please CALL Today!**  
**(619) 365-9718 or**  
**Fax: (619) 228-1567**

CIRCLE 577 ON READER SERVICE CARD

### Medical Office Mgmt.

**TessSystem™** software for insurance and billing. Our \$1295 package outperforms software selling at three times that price. Expandable line to grow with your needs. Call for product literature and DEMO software today! New modules include electronic claims and multi-user for Mac networks.  
**Wabash Medical Resources, Inc.**  
6865 Parkdale Pl., Suite A  
Indianapolis, IN 46254  
317-299-7800

## The Bottom Line:

There's no easier, faster, or more economical way to get your message in front of today's volume mail order buyers than to advertise in *The Macworld Catalog*.

**Call 800/888-8622**  
**to reserve your space today!**

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## Mental Arts

**Mood Altering Software**  
Synchronicity is an entertaining personal strategy tool that helps you resolve the kind of questions logic can't handle. Turn stress into strategy. Stimulate your own intuition for a fresh, creative approach to any challenge or relationship. Beautiful art and sounds animate the Book of Changes in a relaxing, inspiring, and fun way. A life-long gift recommended by Macworld review. Only \$49.95. Visa/MC. Call now. *Visionary Software, Inc.*  
P.O. Box 69191  
Portland, OR 97201  
800/877-1832, 503/246-6200

**2.2**  
Now with  
third ear training

**PRACTICA  
MUSICA™**  
Ear Training & Music Theory  
for Everyone

"Best New Education Program, 1987"  
-MacUser Magazine

- Teaches intervals, chords, melody, rhythm
- Interactive staff notation • Saves scores
- High quality sound • MIDI compatible
- Historical & computer-generated melodies
- Custom ear training melodies
- Includes textbook • Beginners to advanced

\$125 • Call Toll Free 800-445-4866

**ARS NOVA**  
BOX 637, KIRKLAND, WA 98083

CIRCLE 560 ON READER SERVICE CARD

## Programming Tools

**MACINTOSH  
CROSS ASSEMBLERS**

**µASM™** **NEW!!**  
Version 3.0!

- TEXT EDITOR, CROSS ASSEMBLER, AND COMMUNICATIONS FACILITY IN A COMPLETE INTEGRATED DEVELOPMENT ENVIRONMENT
- MACROS
- CONDITIONAL ASSEMBLY
- LOCAL/AUTO LABELS
- SYMBOL TABLE CROSS REF
- S OR HEX FILE OUTPUT DOWNLOADS TO MOST EPROM PROGRAMMERS

**us \$149.95 EACH PLUS S/H\***

AVAILABLE FOR MOST 8-BIT MICROPROCESSORS. CALL OR WRITE FOR TECHNICAL BULLETIN. 30 DAY MONEY BACK GUARANTEE. MC/VISA.

**Micro Dialects, Inc**  
DEPT. MW, PO BOX 30014  
CINCINNATI, OH 45230  
(513) 271-9100

\* PER SHIPMENT  
\$4 CONTIGUOUS USA  
\$8.00 CANADA/MEX  
\$15 INTERNATIONAL

CIRCLE 624 ON READER SERVICE CARD

## Public Domain

**Blank Disk Battle!**

The Lords of Shareware now pass on massive savings — prices yet unheard of in the USA! Our considerable buying power allows us to sell:

**5.25" (With Sleeves)**  
DS/DD 100's @ 25¢ 1000's @ 24¢  
Colored DS/DD @ 29¢ in 100's (Call!) • DS/HD 50's @ 43¢ 1000's @ 40¢

**3.25" (Suitable Amiga, IBM, ST, MAC)**  
DS/DD 50's @ 48¢, 1000's @ 46¢  
DS/HD (IBM 1.4 Mb) 50's @ \$1.45, 1000's @ \$1.40  
Black and Colors Available

**Pre-formatted Disks!**  
Save Endless Hours of Formatting:  
IBM 5.25" DS-DD 38¢ in 100's  
IBM 5.25" DS-HD 69¢ in 50's  
IBM 3.5" DS-DD 68¢ in 50's  
IBM 3.5" DS-HD \$1.95 in 50's  
MAC 3.5" DS-DD 79¢ in 50's  
ST 3.5" DS-DD 79¢ in 50's  
AMIGA 3.5" DS-DD 79¢ in 50's  
**ALL DISKS 100% GUARANTEED & CERTIFIED!**

**MAC—APPLE II—AMIGA  
ATARI ST—C64—ATARI 8BIT**

Call this number only for blank disks and non-IBM shareware catalogs — Use 1-800-346-0139 when ordering IBM shareware.

**1-800-782-6861**

**GEMINI™**  
Marketing, Incorporated

12404 SE 38th St.  
Bellevue, WA 98006 USA  
Foreign: (206) 746-7671  
FAX 206-788-0717

**DUPLICATION** Prompt & efficient duplication service on all formats! Please call for further details.

**SHIPPING & HANDLING**  
Add \$4 for first 100 or less, and \$1.00 per 100 thereafter. Goods are subject to availability and prices are subject to change without notice.

CIRCLE 653 ON READER SERVICE CARD

## The Biggest Small Investment You Can Make.

Take advantage of the direct link with your buyers that maximizes exposure at a low cost.  
The *Macworld Catalog* reflects the expanding corporate Macintosh audience whose purchasing activities increasingly include mail order. The cost-effective direct response advertising available monthly in *The Macworld Catalog* links you instantly with nearly 500,000 qualified buyers.  
Get into the link. Call 800.888.8622 and place your ad now!

**800.888.8622**

## Music/MIDI

### MIDI BLUES?



MacBEAT specializes in Sequencing, Notation, Sampling, and Editing programs. We can help you make the right choices for designing or augmenting your MIDI Studio. We offer the best prices and support for all Music Software, MIDI Interfaces, and peripherals. Our exclusive Music Accelerator Pamphlets and diskettes are designed to help you get rolling.

**Mac BEAT!**

320 Paseo de Peralta, Suite E  
Santa Fe, New Mexico 87501  
**1-800-MAC-BEAT**  
Mon-Sat 8 am-9 pm Pacific Time

CIRCLE 656 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## FREE SOFTWARE CATALOG

Over 1000 Macintosh quality software.  
For fast service  
Write to:

**SOFTSHOPPE, INC.**

P.O. Box 3678  
Ann Arbor, MI 48106-3678  
(313) 761-7638

CIRCLE 651 ON READER SERVICE CARD

## Property Management

Comprehensive software for managing residential, commercial, condos, and more. Two versions: Basic PM for owner/manager — \$495, Deluxe PM with complete general ledger for professional management — \$1,195. Includes check writing, recurring expenses, financial statements, complete management reporting.

*Yardi Systems, Inc.*

813 Reddick St.  
Santa Barbara, CA 93103  
805/966-3666

## Religion

### Bible study tools that grow with you.

**THE WORD** processor  
The most comprehensive Family of Products for Bible Study.

Start with **VERSE SEARCH** including the Bible translation of your choice with Instant Access to any verse. Search for any words or phrases. Separate windows for comparing verses. And much more! Only \$99.95

**AS YOU GROW**, add NIV, RSV, KJV or NKJV text, Greek or Hebrew transliterators or topical cross references, personal commentary, a chronological Bible and chain references. Our memory resident

**VERSE TYPIST** transfers verses to your word processor.

### Bible Research Systems 1-800-423-1228

2013 Wells Branch Parkway #304 • Austin, Texas 78728  
Tech Support (512)251-7541 Postage extra. For IBM, MSDOS, Macintosh.

CIRCLE 568 ON READER SERVICE CARD

## Real Estate

## Reference

### Real Estate Software

The Ten Minute

**Property Manager** \$195

Accounting system for multiple properties. Ideal for investors who manage their own properties.

**ProAnalysis** \$295

A sophisticated investment analysis program designed for the investor who demands professional quality analysis.

**Demos Now Available!**

**Metropolis**  
Software

499 Hamilton Ave.  
Suite 202  
Palo Alto, CA 94301  
(415) 322-2001

CIRCLE 623 ON READER SERVICE CARD

### The Birthday Book

A Treasury of Names & Birthday Lore. Meaning & Origin of over 15,000 Names, Birthstones, Gems, Birthday Flowers, Colors & their Meanings. Astrological Signs & affinities, Wedding Anniversaries And More. Discover the ones for you, your family & friends. The most comprehensive listing ever \$35+4 s/h.

*ImaTeQ Systems*

#125 3533 31 St. NW.  
Calgary, Alberta, Canada T2L 2K7  
Collect 403/282-6720

## Property Management III

**RealData's latest — A comprehensive management and accounting package for residential and commercial property, PM III is ideal for the individual owner as well as the professional manager. It offers integrated AR, AP and GL, maintenance tracking, lease abstracting, and extensive management and financial reporting. \$1495 to handle unlimited properties/units, \$695 for limited (100-unit) version.**

**Evaluation copy, with documentation, just \$45 (plus s/h)**

**Also New: Real Estate Partnership Plus** Analyze investments to be structured as limited or general partnerships. Handles allocations of income, cash flow, profit, preferred return. Requires Excel. \$295

Finally, don't forget our best seller, **Real Estate Investment Analysis** for cash flow, profit and those complex tax calculations. \$250

**REALDATA®**  
78 North Main St., South Norwalk, CT 06854

ORDERS ONLY 1-800-899-6060  
INFO (203) 255-2732  
FAX (203) 852-9083

CIRCLE 638 ON READER SERVICE CARD

### Church Data Master Plus

for comprehensive data management for churches of all sizes.

Membership - \$265.

Contributions - \$265.

Accounting - \$265.

Integrated Package - \$795.

Multi User (3) \$995.

Multi User (4-10) \$1,395.

Full working demo send \$10.

*Computer Helper Publishing*

5898 Cleveland Avenue

Columbus, OH 43231

1-800-533-5227

### Church Master

Written by computer professionals involved in church management. Skilled users love its power, depth and flexibility. Novices love its ease of use. 13 optional modules with support and upgrades. For Macintosh, IBM compatibles, XENIX, LANs. We understand computers and churches.

*Summit Systems, Inc.*

Suite 121, 16 Berry Hill Rd.

Columbia, SC 29210

803/798-9749 FAX:803/731-0349

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## Sales/Marketing

**Market Master for Mac**  
MacGuide calls it "the Best Sales lead follow-up you can buy." Enter leads whenever you get them & MarketMaster™ contacts the right people the right way at the right time. Prints letters, envelopes, phone lists, scripts, & NEVER FORGETS! Easy to learn & use. Frees salespeople to SELL & supports them to SELL MORE!  
Breakthrough Productions  
10659 Caminito Cascara  
San Diego, CA 92108  
619/281-6174

## Scientific

**Geological Software**  
Great graphics, low prices! • Lithologic log plotting • Gridding • Contouring • Piper/Stiff plots • Oil & Gas economics • Stereonet plots • Plate tectonics • Geophysical modelling, +much more for the Macintosh & PC \$50-\$1500. Call or write for FREE catalog of easy-to-use software products.  
RockWare Inc.  
4251 Kipling, Suite 595  
Wheat Ridge, CO 80033  
303/423-6171, Telex: 9102504964

## Self Improvement

**Goal Writer**  
The key to "Success" is writing down your own goals. Goal Writer takes your aspirations and dreams and turns them into realistic and effective goal plans. This \$99 hypercard stack guides you through the goal writing process starting from self evaluation, all the way to organizing them into seven major areas of life.  
Attn: Michael Wharton  
Goal Writers Co.  
1307 Brookstown Avenue  
Winston-Salem, NC 27101  
919/724-3445

## Spreadsheet

### Spreadsheet Compiler

At last, you can convert your Microsoft Excel templates into royalty-free stand alone applications. This means big savings for your users and increased sales for you because your users with our 30 Day Money Back Guarantee. See us no longer need a spreadsheet program to run at MACWORLD Expo Brooks Hall Booth 5833.

**To order or for more information call (714) 842-4292**

Night Diamonds Software P.O. Box 1783 Huntington Beach, CA 92647

CIRCLE 618 ON READER SERVICE CARD

## Statistics

### CLR ANOVA

Analysis of variance program that can compute up to a 10-way design with repeated measures and unequal n. Marginal means, plots of interactions, simple effect, range tests, contrasts, and more. Full Mac interface. Can read text files w/entries separated by spaces, commas, or tabs. \$100 + \$3 s/h.  
Clear Lake Research  
2476 Bolsover #343  
Houston, TX 77005  
713/523-7842

## Training

### TEACH YOURSELF

Used by Microsoft and Apple for their authorized training centers in Europe

These self-paced disk & workbook based tutorials take you through the nitty-gritty and the sublime of powerhouse software with equal finesse. Most of these guides are equivalent to a full two-day training session, but can be completed in 5 to 10 hours, at your own pace and at your convenience.

**Top Tutor - MacWorld Magazine's pick for the best tutorial in its class - February 1990**  
A touch of class - MacUser

**Choose from**  
Teach Yourself Excel  
Teach Yourself Word  
Teach Yourself PageMaker  
Teach Yourself 4th Dimension  
Teach Yourself Hypercard  
Teach Yourself QuarkXPress

**TUTORLAND CORPORATION**

PO Box 160429 • Cupertino, CA 95016 • (408) 973-0472

To Order, Call 1-800-888-8689  
Major Credit Cards accepted  
All Tutorials are 79.95 • Add \$6 for shipping and handling

CIRCLE 637 ON READER SERVICE CARD



**SAFEWARE**

**INSURES YOUR COMPUTERS**

Full replacement of hardware, media, purchased software. As low as \$49 yearly. Covers fire, theft, power surges, other accidents. Blanket coverage; no list of equipment needed. Call for information or immediate coverage.


**1-800-848-3469**  
Local (614) 262-0559

SAFEWARE, The Insurance Agency Inc.  
2929 N. High Street, P.O. Box 02211  
Columbus, OH 43202

CIRCLE 640 ON READER SERVICE CARD

## Services

### Computer Insurance



DSI provides you with coverage for all common risks, even lost data, and theft from an unattended vehicle. As low as \$35/year.

**DATA SECURITY INSURANCE**

The ONLY "ALL-RISK" Policy  
Call today for immediate coverage.  
**1-800-822-0901**

CIRCLE 590 ON READER SERVICE CARD

## Data Conversion

### TAPE/DISK CONVERSIONS

Conversion services to or from over 2000 computer systems:  
• Magtapes • Mini Computers  
• Micro Computers • Typesetters  
• Word Processors

**CALL THE INDUSTRY LEADERS**

**PIVAR COMPUTING SERVICES, Inc.**

**800-HI-PIVAR**  
165 Arlington Heights Rd #MC  
Buffalo Grove, IL 60089

**WE CAN CONVERT DATAFILES TO/FROM OVER 1,500+ SYSTEMS IN VIRTUALLY ANY FORMAT! — ON DISKS OR TAPES!**

#### Systems like:

- Mainframes
- Minis
- Microcomputers
- Dedicated Word Processors
- Typesetters, etc.

#### Formats like:

- MacWrite\*
- Microsoft Word\*/Works\*
- WordPerfect\*
- Omnis\*
- 4th Dimension\*
- FileMaker\*
- Jazz\*
- Excel\*
- Tab-delimited
- ASCII, etc.

\*Trademarks of their respective companies

**CompuData Translators, Inc.**

3325 Wilshire Blvd. Ste. 1202  
Los Angeles, CA 90010  
**800/825-8251 • 213/387-4477**

CIRCLE 579 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



## Desktop Publishing

**We Challenge You...**  
to find a service bureau that provides 1,200 and 2,400 dpi PostScript® output on RC paper, film and plates with:

- Consistently lower prices
  - A money-back guarantee
  - No minimums
  - Easy credit terms
  - Free 24 hour turnaround
- Well, look no further:

**Icons & Images, Inc.™**  
Box 434  
Greenwich CT 06836  
800/869-9059,  
203/661-4469  
FAX/BBS, 203/629-1695

CIRCLE 660 ON READER SERVICE CARD

## Laser Recharge

reconditioned **TONER** cartridges!  
for laser printers & Canon PC Copiers

**BETTER THAN NEW!**

- 20% MORE TONER
- DARKER PRINT
- 100% GUARANTEED

Willow Products Corp.  
3857 Willow Ave, Pgh, PA 15234

From **\$44.95**

We buy empties  
call for brochure  
800-426-8196

**WILLOW**

CIRCLE 673 ON READER SERVICE CARD

**laser saver**

1352 Fifth Ave • San Diego • CA • 92101

**\$44** Return Shipping Included

**LONG-LIFE RECHARGED TONER CARTRIDGES**

- 30% More Printing
- Your Cartridge
- Blacker Blacks
- Colors Available
- 24-hr Turnaround
- 100% Guaranteed

**1-800-234-3383**

CIRCLE 612 ON READER SERVICE CARD

**Waldman**  
*graphics*

Printers + Typographers

## Desktop Designer's Super Service Bureau

Maintain highest quality standards and lower your costs. We can accept any PostScript file for B/W and full color output. Original electronic art and PostScript effects our specialty. Complete Visionary Gateway and V.I.P. services to powerful Scitex color center. Knowledgeable people, high resolution output, color proofing, quick turnaround.

- 1270 & 2540 dpi pages from Linotronic L300s ■ Repro, Pos. & Neg. film ■ Disk Conversion ■ 24 hour Modem ■ QMS ColorScript 100
- Scitex Color Imaging & Separations
- Full Electronic Prepress ■ High Quality Color Printing ■ Mailing
- 20 Messengers to NYC, Phila., N.J.
- Discount Adobe Dealer

Call Mike Gladden or George Gunzelman for more information about our extensive DTP services.

609/662-9111 800/543-0955  
Modem - 609/662-3788

CIRCLE 669 ON READER SERVICE CARD

We image: PICT, PICT 2, 32-bit PICT, Scrapbook, TIFF, PostScript



**\$5 Slides** The "original" Mac \$5 imaging service!

We're not just another PC imaging house, we're expert Macintosh slide makers!

- True customer service
- Unsurpassable 4K quality
- Color overheads and hard copy available

24 Hour Turnaround Standard (Rush Available)

In NY State Call: 212.989.2727  
Outside NY State Call: 800.445.9002

Nextwave Productions NYC, NY

Visa, MasterCard, American Express, Corporate Accounts

CIRCLE 557 ON READER SERVICE CARD

## SLIDES!

### ATTENTION USERS OF

- POWERPOINT 2.0
- PERSUASION
- STAND OUT!
- MORE II • MUCH MORE!

### DIGITAL PHOTO

WILL IMAGE ANY PICT OR 24 BIT TIFF FILES.

24 HOUR MODEM  
2 FREE SLIDES  
WITH FIRST ORDER

CALL FOR INFORMATION:  
402-393-1744

**\$7**

CIRCLE 585 ON READER SERVICE CARD

## Questions?

Use the Reader Service Card to request free information about the products you see in *The Macworld Catalog*.

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.





# The Macworld Catalog

## Training

**BSc & MS in COMP SCI**  
The American Institute for Computer Sciences offers an in-depth correspondence program to earn your BSc & MS degrees in Computer Science at home. BSc subjects include: MS/DOS, BASIC, PASCAL, C, Data File Process, Data Structures & Operating systems. MS program includes Software Engineering and AI.  
**AMERICAN INSTITUTE for COMPUTER SCIENCES**  
1704-MW 11th Avenue  
South Birmingham, AL 35205  
205-933-0339

## Accessories

### Mouse Pads

#### Company Logo Specialist

Qty.	Canvas	Hard Surface
12	\$8.50 w/logo	N/A
72	5.90 w/logo	7.15 w/logo
144	3.96 w/logo	5.21 w/logo
500	3.40 w/logo	4.65 w/logo
1000	3.28 w/logo	4.53 w/logo

Canvas or Hard Surface in a variety of colors. Size 9.5"x8"x3/8". Multi-color OK. SAMPLES with your logo \$12.50. ENTIRE pad imprintable and 100% guaranteed.

**Computer Expressions**  
3833 Chestnut Street  
Philadelphia, PA 19104  
800/443-8278

### Mouse Pads

Custom Printing Available.

Cloth: 13 Colors

Size:	8x7 1/4	8x9 1/2	8 1/2 x 11
12 Pads	3.25	3.50	3.75
72	3.00	3.25	3.50
144	2.85	3.00	3.25

PLASTIC: Blue, Platinum, Gray, Red & Black. Size: 8 1/2 x 11

12 Pads	6.50	36	6.00
72	5.75	144	5.25

ASK US ABOUT OUR PICTURE PADS!

*Precision Line Inc.*

14100 23rd Ave. N.

Minneapolis, MN 55447

612/557-1979, 1-800/328-0077

## Supplies

**HIGH DENSITY 1.44 MB 100% ERROR FREE**

**1.44 MB \$1.50** (each 1000 of 25)

**5.25" DS/HD 1.2 MB .... DK. BLUE - 69¢**  
PACKED IN LOTS OF 100 WITH TYVEC SLEEVES & TABS

**5.25" DS/HD 1.2 MB, INCL. Sleeves & Tabs, BLACK**  
Lots of 100 - 49¢ ..... Lots of 50 - 59¢

**5.25" DS/DD 360K, INCL. Sleeves & Tabs**  
Lots of 1,000 - 21¢ ..... Lots of 200 - 25¢

**3.5" DS/DD 720K (1MB)**  
PREMIUM QUALITY BULK ..... Lots of 50 - 49¢

**3.5" DS/DD 720K (1MB) - SONY BULK**  
Lots of 50 - 79¢ ..... Lots of 25 - 89¢

**3.5" DS/High Density 1.44MB (2MB)**  
PREMIUM QUALITY BULK ..... Lots of 25 - \$1.50

**AMERICAN GROUP**  
**800-288-8025**  
12132 Sherman Way, N. Hollywood CA 91605  
CALL OR MAIL

CIRCLE 676 ON READER SERVICE CARD



### The Best Case Scenario

Airline Check-in or Local Use

Zero Halliburton Aluminum Mac Cases:  
Lightweight, Durable, Distinctive Styling  
Plus/SE IIcx II/IIx Monitor Cases  
Portable Attache ImageWriter II

from \$299.95 1-800-542-4591

TCC 13101 Wash. Blvd., #110, L.A., CA 90066

CIRCLE 607 ON READER SERVICE CARD

## Dust Covers

for a Clean Machine



Protect your equipment from dust, spills, and aggravating downtime with ABCOM DUST COVERS for personal computers.

Attractive, water-resistant packcloth in NAVY, SILVER, or BROWN



MC & VISA ACCEPTED. PLEASE WRITE OR CALL FOR COMPLETE PRICE LIST AND BROCHURE  
2333A N. STELLA HWY., BISHOP, CA 93514  
619/872-1946

CIRCLE 552 ON READER SERVICE CARD

## Reclaims Desk from Disks

The VDS 240

- Vertical Disk Storage
- Holds 240 Disks
- Mounts on Wall
- Frees Desk Space



*"It's the only way to store disks"*  
—Jeff Widham, owner, MacOrchard

**To Order: 1-800-942-4008**

Vertical Solutions • P.O. Box 7335 • Olympia, WA 98507 • 206/352-2097

CIRCLE 694 ON READER SERVICE CARD

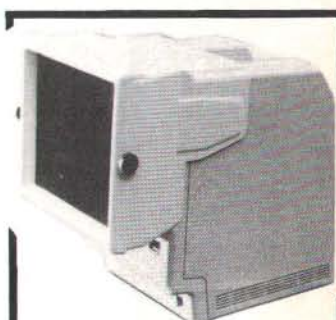
**DUST COVERS 100% COTTON CANVAS**

**ComputerWear**

Beige w/ Grey Trim Breathable! Static-Free!

**NEW! Seal-Skins**  
For Keyboards

**1-(800) 826-5761**  
Int'l: (415) 759-1466 Fax: (415) 564-0506  
Contemporary ComputerWear 1320-36th San Francisco 94122



## NUVU GIVES EYESIGHT TO THE MAC BLIND

**ENLARGE YOUR MONITOR SCREEN OVER 70%!**

High quality lens by 3M coupled with a Polaroid anti glare filter. In a sleek mounting hood designed specifically for Mac monitors.

## FINALLY A BIG CLEAR PICTURE!

Retail price \$149.95  
To order, or for more info:

**• 800-872-1051 •**

Other models available.  
Dealer inquiries invited.

Less Gauss Inc.  
Box 5006 Rhinebeck, N.Y. 12572

CIRCLE 601 ON READER SERVICE CARD

June Catalog ad close date:  
March 21, 1990

Call 800/888-8622 to reserve space.

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# The Macworld Catalog



3.5" DS/DD Bulk Disks  
**39¢** ea. in lots of 25

3.5" DS/HD Bulk Disks  
**89¢** ea. in lots of 25

3.5" Disk Cases - Protects up to 50 Disks  
**\$2.97** each (for 2 or more)

Apple ImageWriter I & II Ribbon  
**\$1.67** each (In Packs of 6)

4-Color Apple ImageWriter II Ribbon  
**\$5.97** each (In Packs of 2)

Mouse Pad **\$2.99** each

3.5" User Labels - In Assorted Colors  
(\$1.50 per pack of 50 labels)

Add shipping - 50¢ per 25 3.5" disks; 75¢ per disk case; \$1.50 per pack of ribbons; 50¢ per mouse pad; User Labels - No shipping charge

Add Order Processing, Packaging & Handling - \$3.00 Per Order

MEI/Micro Center - 1100 Steelwood Rd.  
Columbus, Ohio 43212

**Call 1-800-634-3478**



## Mailing Lists

### MAILING LIST of Mac Users

On labels, tapes, disks, CD-ROM, or by modem



Choose from hundreds of thousands of users at residences, businesses, or schools, in any ZIP code range. 2¢ to 5¢ per name. Free selecting, sorting, delivery. Call for free custom counts.

Semaphore Corporation, 207 Granada Dr., Aptos, CA 95003  
(408) 688-9200 (voice) 662-2717 (modem)

CIRCLE 642 ON READER SERVICE CARD

**You Can  
Access More  
than  
375,000  
Macintosh  
Buyers**

Put your product in front of the people who do more than just shop. Your ad in *The Macworld Catalog* links you instantly with more than 375,000 qualified buyers.

*The Macworld Catalog* is the direct response section for the Macintosh marketplace. It's action-oriented advertising that reaches the experienced users who know what they want, want it fast, and look for it here—each and every month.

The most readers. The least cost. Immediate access. Just call *The Macworld Catalog* at 800/888-8622 and place your ad—today!

**800/888-8622**

## Miscellaneous Business Opportunities



### Pack your Mac in seconds!

Cordura case has internal padded pockets for mouse, keyboard and drive. Available in six colors. Extended Keyboard version also available.

For a dealer near you  
call toll free  
**1-800-548-0053**  
West Ridge Designs  
1236 N.W. Flanders  
Portland, OR 97203

CIRCLE 670 ON READER SERVICE CARD

In every growth industry there can be only one leader. One company with the best combination of product quality, management experience and proven success. In the promising world of toner recharging, only one company is at the top—LaserCharge.

And there is still room for you in our future. We've got the most advanced technology, training and marketing

support in the industry. LaserCharge offers its licensees everything they need to get their business off to a strong start.

Find out more about the exciting growth opportunities in the toner recharging industry. Build a better bottom line by starting at the top. Call LaserCharge today.

**800-999-8134**

**There's Still Room  
at the  
Top**

**LaserCharge**

11130 Metric Boulevard, Austin, Texas 78758

CIRCLE 597 ON READER SERVICE CARD

For your ad to appear on *The Macworld Catalog* screen, call 800/888-8622.



# BEST-SELLERS

Months on chart	Last month	This month	
▼	▼	▼	<b>BUSINESS SOFTWARE</b>
38	2	1	<b>Microsoft Works</b> Microsoft
59	1	2	<b>Microsoft Word</b> Microsoft
50	3	3	<b>Microsoft Excel</b> Microsoft
46	4	4	<b>Aldus PageMaker</b> Aldus
35	5	5	<b>MacWrite</b> Claris
14	9	6	<b>QuarkXPress</b> Quark
19	6	7	<b>WordPerfect for the Macintosh</b> WordPerfect
47	7	8	<b>MacDraw</b> Claris
12	—	9	<b>FileMaker II</b> Claris
5	10	10	<b>Wingz</b> Informix

## EDUCATION SOFTWARE

13	1	1	<b>Where in the World Is Carmen Sandiego?</b> Brøderbund
26	2	2	<b>Reader Rabbit</b> The Learning Company
42	3	3	<b>Math Blaster</b> Davidson & Associates
5	4	4	<b>Math Rabbit</b> The Learning Company
32	—	5	<b>KidsTime</b> Great Wave Software

## ENTERTAINMENT SOFTWARE

42	2	1	<b>MacGolf</b> XOR/PCAI
2	4	2	<b>Tetris</b> Spectrum HoloByte
38	3	3	<b>Dark Castle</b> Silicon Beach Software
4	1	4	<b>SimCity</b> Maxis Software
16	—	5	<b>Beyond Dark Castle</b> Silicon Beach Software

## NETWORK/DATA COMMUNICATIONS

38	1	1	<b>TOPS</b> TOPS
34	2	2	<b>AppleShare</b> Apple Computer
41	3	3	<b>LocalTalk</b> Apple Computer
26	4	4	<b>PhoneNet</b> Farallon Computing
7	—	5	<b>NetWare for the Macintosh</b> Novell

Months on chart	Last month	This month	
▼	▼	▼	<b>HARD DISKS*</b>
19	1	1	<b>MacStack SD20</b> CMS Enhancements
18	3	2	<b>FX20</b> GCC Technologies
31	—	3	<b>Apple Hard Disk 20SC</b> Apple Computer
1	—	4	<b>DataFrame XP60</b> SuperMac Technology
7	5	5	<b>Rodime 45 Plus</b> Rodime

## ADD-IN BOARDS/MEMORY

27	—	1	<b>Apple 2MB Memory Expansion Kit</b> Apple Computer
28	3	2	<b>Radius Accelerator</b> Radius
24	2	3	<b>Apple 1MB Memory Expansion Kit</b> Apple Computer
16	1	4	<b>Radius Interface Display</b> Radius
3	—	5	<b>2MB Expansion Board</b> Mac Products USA

## PRODUCT WATCH

Recent or forthcoming products of particular interest.

**ComputerEyes** *Digital Vision* Low-cost 24-bit color digitizer

**ParaFont** *Design Science* PostScript font-editing software

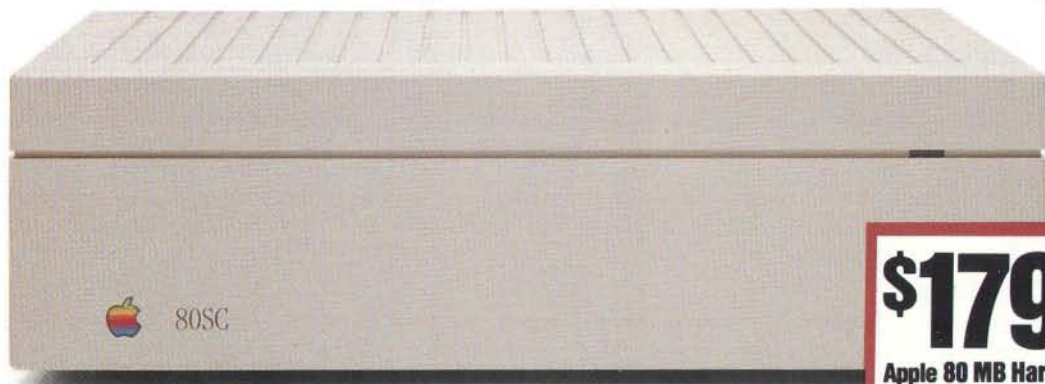
**PosterWorks** *S.H. Pierce & Co.* Software for large-scale color PostScript images

Source: Exclusive InfoCorp survey of more than 125 Macintosh retailers and selected mail-order vendors. Covers sales during December 1989.

\*Does not include hard disks installed at the factory.



# This is Apple's Best Buy on a Big Hard Drive;



**\$1799**  
Apple 80 MB Hard Drive

# This is Ehman's.



**\$749**  
Ehman 45MB Removable

The perfect hard drive would have unlimited storage capacity, be lightning fast and be as reliable as rain in Seattle in the springtime. And, oh yes, it would have all of the above, at a price that would make the stingiest Scrooge smile.

Using that criteria, the Ehman 45MB removable just may be the perfect hard drive.

Its storage capability expands with your needs. For more storage capacity all you do is buy another 45MB removable cartridge for just \$99. Buy as many as you need. In fact you could buy 10 cartridges, almost 500MB of storage, and still pay less than an Apple 80MB fixed hard drive.

With an access speed of just 20 ms, the Ehman removable will hold its own with just about any hard drive on the market. And with a reliability

rating of 30,000 hours and a warranty of 2 years, you can be assured that in this case, speed doesn't burn. For another \$20, you can have complete assurance and overnight service, with the Ehman Express Service Program.

The best part is that our best buy on a big drive won't burn a hole in your pocket. At just \$749 including one cartridge, the Ehman removable costs less than half of the Apple 80MB drive and comes with a 30 day, no questions asked, money back guarantee. Give us a call today at 1-800-257-1666 and see first hand why Ehman is now the fastest growing manufacturer of Macintosh peripherals.

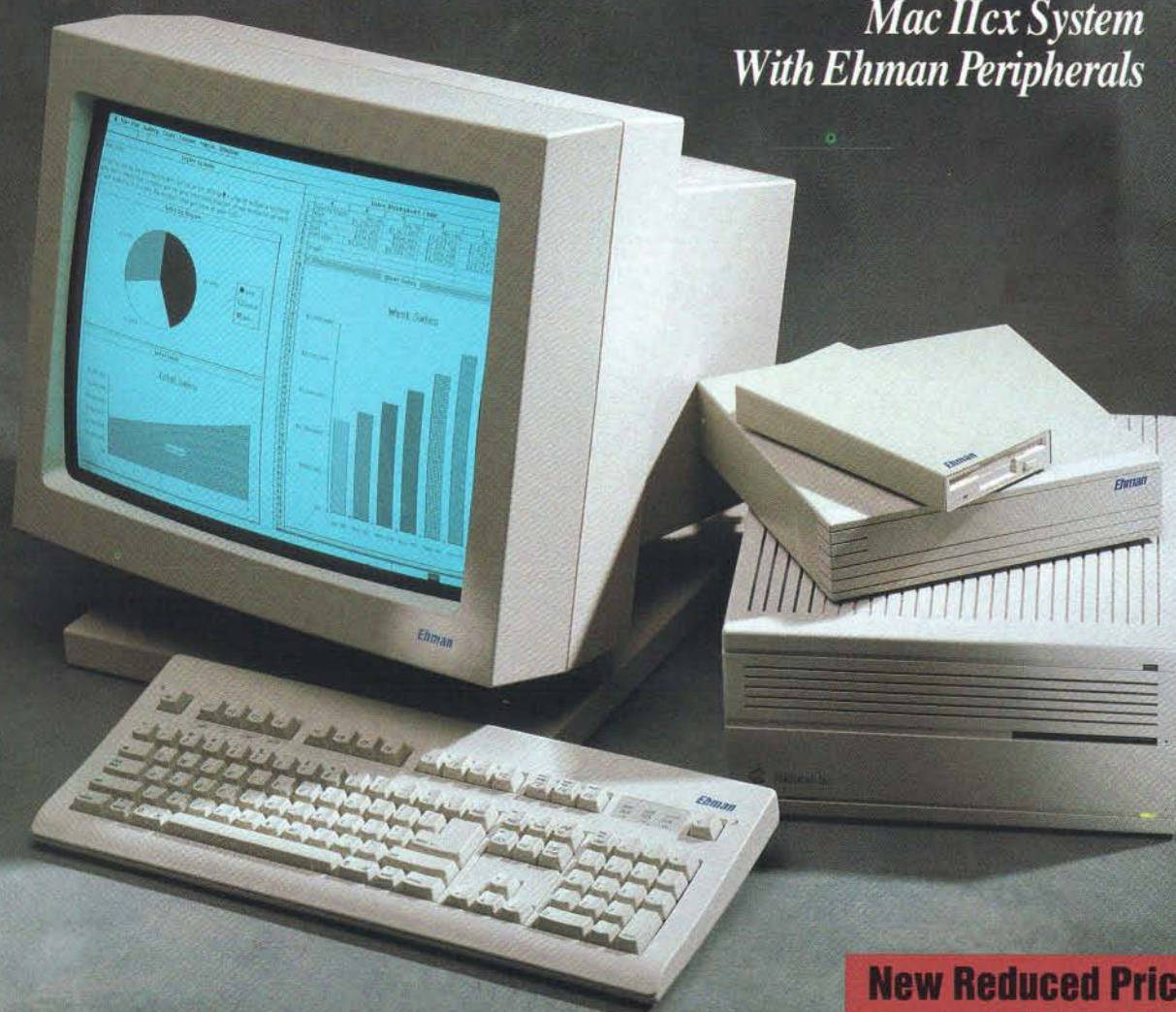
**Ehman**

**1-800-257-1666**

Circle 500 on reader service card



*Mac IIcx System  
With Ehman Peripherals*



**New Reduced Prices!**

**Quantum 40MB — \$399**

**Quantum 105MB — \$699**

# Notice The Difference, Certainly Will.

think again. Our monitor has a flicker-free refresh rate higher than either Apple or Radius. And our hard drives are now significantly faster thanks to new caching software, and still come with reliability ratings up to 100,000 hours between failures.

So before you pay top dollar for a premium label, give Ehman a call at 1-800-257-1666 and see about an alternative that makes a very big difference—to your pocketbook. One look and you'll know why we're now the fastest growing peripheral manufacturer in the business.

**Hard Drive Prices**

Size (MB)	Internal	External
20	\$299	\$349
30+	\$349	\$399
40Q	\$399	\$479
45	\$399	\$449
60+	\$479	\$549
80+	\$529	\$599
105Q	\$699	\$799
135	\$899	\$999
180	\$1,049	\$1,149
45 Removable		\$749

**Ehman**  
**The Apple Alternative**

Call 1-800-257-1666  
or 1-307-789-3830  
Fax 1-307-789-4656

Circle 154 on reader service card



## Mac IIcx System With Apple Peripherals



# Most Users Won't No But All Buyers

Next time you buy peripherals for your Macintosh, make sure you look at the price tag and not just the label. You'll find big differences between Apple and Ehman.

First and foremost, Apple is in the business of making computers. Ehman is in the business of making computer peripherals. And since 1985 we've been out front in providing Macintosh users with the best combination of price and performance available. Like a 20 MB

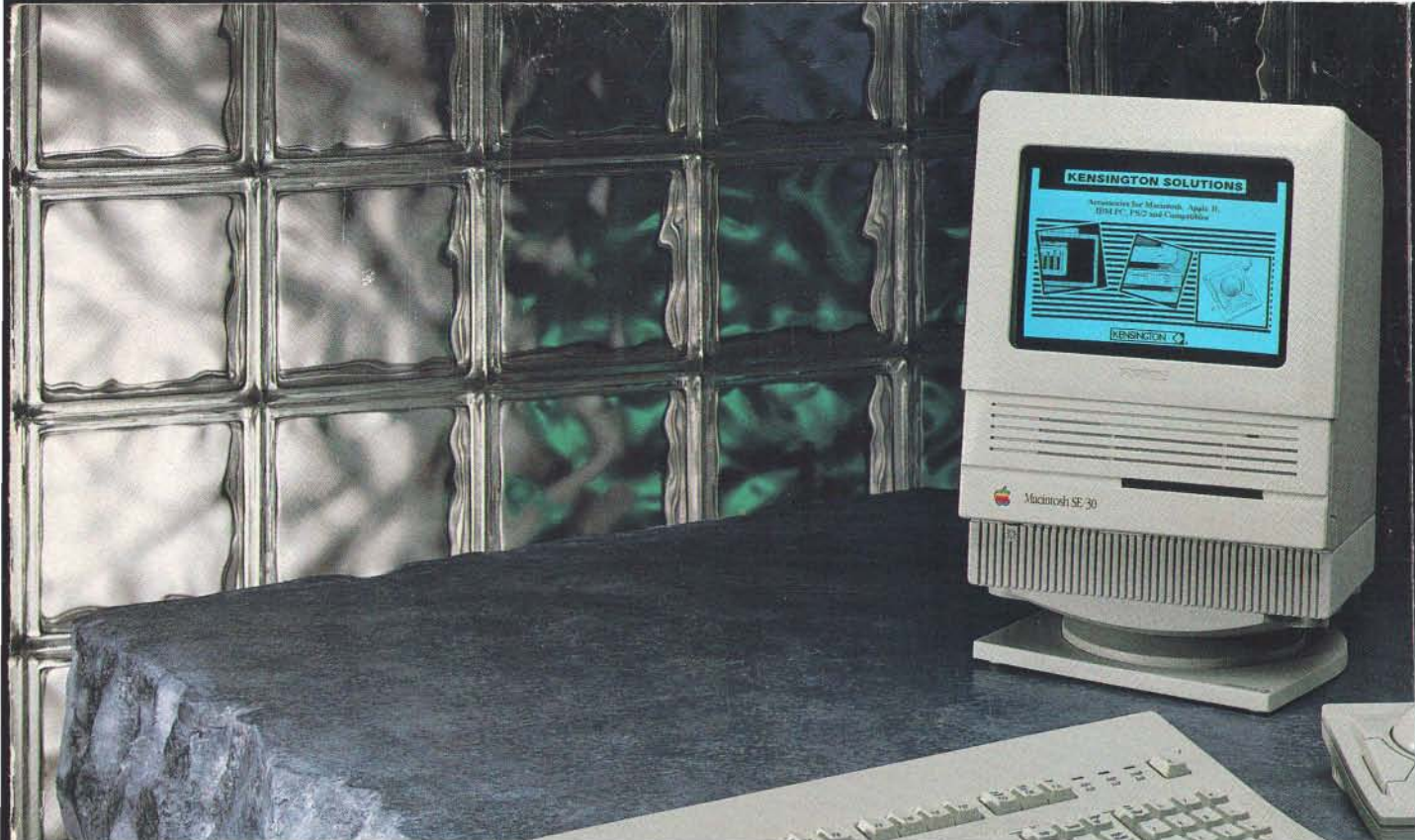
hard drive for just \$299, or our new two-page monochrome monitor for only \$899 including video card and tilt/swivel base.

We can save you hundreds of dollars over a peripheral with an Apple logo on it. What's more, you'll enjoy the added benefits of a lengthy warranty, free direct-telephone support, free third-party utility software, a 30 day moneyback return policy and even an optional, overnight loaner service program.

And, if you thought you would have to make major concessions in quality,

Apple		Ehman	
Mac IIcx . . .	\$4669	Mac IIcx . . .	\$4669
80 MB External Hard Drive . . .	\$1799	80 MB External Hard Drive . . .	\$399
2-Page Monitor with Card . . .	\$2748	2-Page Monitor with Card . . .	\$899
101 Extended Keyboard . . .	\$229	105 Extended Keyboard . . .	\$99
800K Floppy Disk Drive . . .	\$429	800K Floppy Disk Drive . . .	\$149
<b>Total \$9874</b>		<b>Total \$6415</b>	





# EYESORE Vs. EYE PROTECTION

As today's monitors get bigger and brighter, anti-glare filters become less of an option and more of a necessity.

The right filter can combat eye fatigue, help eliminate headaches, even reduce overall body stress.

Yet, the irony is that something so good for your eyes can be such an eyesore.

In fact, most filters look like they belong to someone else's system.

The fit is sloppy. The colors don't match. The materials are different.

Kensington has a different idea.

Instead of making a filter that will fit on any monitor, we make filters

that will only fit a specific monitor.

An example is our Maccessories® SE Anti-Glare Filter.

It looks so much a part of the SE, you would think it was designed by the same people who designed the SE.

Circle 30 on reader service card

The styling is complimentary. The color identical. Even the same material is used.

And unlike generic filters, the fit is perfect. So light passes through the filter, never around it.

Kensington uses only optical quality glass with a ceramic anti-reflection and scratch-resistant coating.

The result is a 96% reduction in glare. And an improvement in contrast and clarity of up to 20 times.

In short, the most advanced eye-protection system you can find today—it even filters out VLF and ELF radiation and dissipates static.

Kensington has custom designed screens for the Mac, Mac Plus, Mac SE, Apple IIGS, as well as for the entire Mac II family of large screen monitors.

For a free brochure, and the dealer nearest you, call 800-535-4242. In New York call 212-475-5200.



**KENSINGTON**